THE

MAVERICK NATIONAL BANK

MANUAL.

BOSTON, JULY, 1887.

The Maverick National Bank of Boston presents its patrons and the representatives of the leading financial interests throughout the United States with this volume of financial statistics, carefully compiled by specialists from the very latest sources It has endeavored to present a readable volume as well as one valuable for reference.

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THE OUTLOOK.

Rarely has the nation presented so peaceful an outlook in financial and industrial affairs as during 1887. But three features in the situation appear to call for public discussion: the inauguration of inter-state commerce legislation, the labor agitation, and the proper disposal of the government surplus.

With the latter only has the Maverick National Bank to treat, but it cannot forbear the expression of opinion concerning the other two features, that in the end the wisdom of the American people will be justified and our ability as a nation to amalgamate all peoples and creeds will not be found wanting. Labor will have its due reward and its just share in our national prosperity, and capital, whether in lands or railroads, will have just protection. We believe in the nation and the credit of the nation, and therefore believe in the people and a government of the people; we believe in progress and in "good times" for all honest labor of brain and hand.

The treasury surplus question presents to the Maverick National Bank patrons a problem of immediate interest.

The tenor of the administration and of public sentiment is to legitimately restrict the operations of the government; to involve it in no new or hazardous enterprises calling for public funds; to maintain peace with all nations, relying upon the spirit of patriotism and national unity of a people now rising sixty millions in population, — the richest, strongest, and most united nation in the world, — rather than upon fortifications and idle armies, as security for its national peace; to meet promptly the expenses of a past internal strife, including pension bounties and all just claims; and to apply the swelling balances of the national treasury to the immediate extinguishment of the public debt.

The United States is the only government in the world that pays its debts at a premium. After the Mexican war the government bought up its bonds — some of which had sold at a discount — in open market at the current rate of premium, and July 30, 1853, an offer was made to purchase loans not falling due until 1867 and 1868, at twenty-one per cent. premium. Up to 1857 the government paid eight millions premium in redeeming fifty-three millions of debt.

Since the war the government has had two and a half billions of debt to readjust, and in refunding this debt it has been able to so arrange it as to make it within the power of the government to pay a large proportion of it at will.

Now rises the question of paying the last billion of the debt, one-quarter of which, running at four and a half per cent., falls due in 1891, and three-quarters of which,

running at four per cent., does not fall within government control as to payment until 1907. We speak of the debt of the United States as in round numbers one billion dollars; but is this really all? Does not the government owe the interest as well as the principal? The government is not a trading or mercantile institution. It has not even the advantage of an investor, who, with a loan running at a low rate of interest and on long time, can take advantage of a higher outside rate to make temporary profitable investments. Here is really what the government owes: —

Rate.	Principal.	Years to Run.	Interest to Redemption.
Four and a half per cents,	$250,000,000 00	4	$45,000,000 00
Four per cents,	738,000,000 00	20	590,000,000 00
Totals,	$988,000,000 00	-	$635,000,000 00

Principal owed,	$988,000,000 00
Interest to accrue,	635,000,000 00
Total to pay,	$1,623,000,000 00

It will readily be seen from this table that the main problem lies in the $738,000,000 of four per cent. bonds which have twenty years to run, and upon which the government is under contract to pay $590,000,000 of interest, or eighty per cent. upon each bond.

Elsewhere in this volume we present for a series of years full statistics of the government surplus, its revenues, appropriations and expenditures, and from these it may be seen that the government surplus averages

$101,000,000 a year. In the last seven years it was $707,000,000. A surplus of about $100,000,000 must accumulate each year under existing laws. This is more than one-tenth of all the money in the hands of the people. Congress has provided for a sinking fund in which about $50,000,000 of this surplus must be invested by purchase of bonds. Future reductions in revenue may reduce the other half of the surplus, but so long as it accumulates it must be put back into the channels of business; and there are only three ways for this: distribution by gift, distribution through government works, or distribution by payment of the debt before maturity. Our policy is, and will continue to be, — PAY THE DEBT.

It should not be forgotten that each $1,000 four per cent. bond represents a government debt of $1,800, or eighty per cent. of interest as well as the principal; and any less price to the government is interest discount, of which the government has the advantage when purchasing its bonds in the open market. Not until government bonds sell above principal and interest can the government be a loser by their purchase for the sinking fund or for debt cancellation.

The Maverick National Bank has sold more than $200,000,000 of the four per cent. bonds, and retains its faith in them as an investment.

CHAPTER I.

HISTORICAL SKETCH OF THE NATIONAL DEBT.

Early Debts. — Early Government Loans (1803-1837). — Division of the Surplus of 1836. — Government Loans (Second Period, 1837-1861). — Fluctuations of the Debt (1837-1861). — Government Loans (Third Period, 1861-1881). Annual Reduction of the Debt (1865-1837). — Analysis of Public Debt. — U. S. Bond Calls (1871-1887). — Bonds Owned by National Banks. — Annual Receipts, Expenditures, Interest Payments, and Surplus of United States (1860-1887). — Annual Appropriations made by Congress (1877-1887). — Debt Statement, June 1, 1887.

Early Debts.

The treasury department, under Alexander Hamilton, was established in 1789. A year later the government assumed debts as follows: —

Domestic debt of the confederation,	$40,256,802
Debts of the individual States,	19,962,219
Foreign debts,	12,556,874
Total,	$72,775,895

Until 1811, the government depended chiefly on customs revenues for support. There was also a nominal internal revenue tax for eleven years after the adoption of the Constitution, but the receipts from it during that time aggregated only about $6,000,000. The public debt, therefore, which on Jan. 1, 1791, stood at $75,463,476, rose to $86,427,120, on Jan. 1, 1804. From 1806 it steadily decreased, until, on Jan. 1, 1812, it amounted to but little over $45,000,000.

Early Government Loans (1803–1837)

Meantime, the government in 1803, had placed a loan of $13,000,000 to provide for the purchase of Louisiana. In 1812, the war with Great Britain heavily reduced its revenue from customs, and at the same time greatly increased its expenses. To meet this emergency, the government borrowed, in 1813, $16,000,000 in twelve-year six per cent. scrip, at an average price of 88. The unfavorable terms were due to the fact that Congress did not lay sufficient revenue to insure prompt payment of interest, and that the Federalists were opposed to the war, and refused to loan money to its support. Internal taxes were resorted to as a war necessity, but were removed in 1817. The suspension of specie payment in 1814, owing to the reckless issue of circulation by the new State banks, forced the treasury to receive payment for the bonds, already issued at a discount, in State bank notes much depreciated in value.

During President Jackson's administration, between 1829 and 1835, the entire public debt was paid off, leaving an available balance in the treasury, Jan. 1, 1835, of $5,586,352. In 1836, the government found itself in possession of a surplus of over $40,000,000, arising chiefly from the sale of public lands. After much debating, Congress in the same year passed an act providing for the transfer of all moneys in the treasury over $5,000,000 to the several States, at a rate proportioned to their congressional representation. The sum thus designated, amounting to $37,468,859, was to be paid in four quarterly instalments, in January, April, July and October, 1837; provided the States authorized their treasurers to accept the loan, and promised to refund the money on demand of the government. Three instalments were paid, in January, April and July, 1837. In a few cases

the States refused to accept the loan on the prescribed terms. The actual sum paid out was $27,063,430. The fourth instalment was postponed by act of Congress until Jan. 1, 1839, on account of the stringency of money following the panic of 1837, and of a deficiency of from six to ten millions between government revenues and expenditures for the year. The payment of the balance was afterward postponed indefinitely. The money actually paid the States has never been recalled, authority never having been given by Congress, nor has the last instalment been paid.

Government Loans (Second Period, 1837–1861).

In 1842, after five years of financial depression, the government issued a twenty-year six per cent. loan of $8,000,000, at par. In 1847, a loan of $18,000,000, for twenty years at six per cent. was floated at 100⅛ to 102, of which Boston capitalists took $7,000,000; and in the following year a second issue of $16,000,000 on the same terms, 103.02 at 103.55, was made, Corcoran & Riggs of Washington taking $14,000,000 at the former rate. These two loans were on account of the Mexican war; and the latter brought a higher price, because issued after peace was declared. In 1843 and 1846, small ten-year six per cent. loans were made; and one called the Texas Indemnity Loan, of $5,000,000 fifteen-year five per cent. bonds, in 1850.

Within a few years after these issues, treasury funds began to increase rapidly, and the government began to repurchase its securities, which had risen considerably above par, at a premium. Until July 1, 1853, these purchases were made at current market prices; but on July 30, 1853, a public offer was made to redeem at the treasury between that time and Dec. 1, 1853, $5,000,000

of the 1867 and 1868 loans at twenty-one per cent. premium; and on August 2, to redeem $2,000,000 of the 1856 and 1862 loans at eight and a half and sixteen per cent. premium, respectively, with interest from July 1. By various renewals of these offers at different rates of premium the debt was reduced from $78,797,816 in 1851, to $25,165,154, on Oct. 1, 1857. In addition to the payment of $53,632,662 of principal, the government paid $8,000,000 in premiums, averaging from twelve to fifteen per cent., — the only instance on record of a nation's redeeming its obligations at a bonus before maturity.

The following table shows the amount of government indebtedness in each year from 1791 to 1850: —

Year.	Amount.	Year.	Amount.
1791,	$75,463,476	1821,	$89,987,427
1792,	77,227,924	1822,	93,546,676
1793,	80,352,634	1823,	90,875,877
1794,	78,407,404	1824,	90,269,777
1795,	80,447,587	1825,	83,788,432
1796,	83,762,172	1826,	81,054,059
1797,	82,064,479	1827,	73,987,357
1798,	79,228,529	1828,	67,475,043
1799,	78,408,669	1829,	58,421,413
1800,	82,976,294	1830,	48,565,406
1801,	83,038,050	1831,	39,123,191
1802,	80,712,632	1832,	24,322,235
1803,	77,054,686	1833,	7,001,698
1804,	86,427,120	1834,	4,760,082
1805,	82,312,150	1835,	37,513
1806,	95,723,270	1836,	336,957
1807,	69,218,390	1837,	3,308,124
1808,	65,196,317	1838,	10,434,221
1809,	57,023,192	1839,	3,573,343
1810,	53,173,217	1840,	5,250,875
1811,	48,005,587	1841,	13,594,480
1812,	45,209,737	1842,	20,601,226
1813,	55,962,827	1843,	32,742,922
1814,	81,487,846	1844,	23,461,652
1815,	99,803,660	1845,	15,925,303
1816,	127,334,933	1846,	18,550,202
1817,	123,491,965	1847,	38,826,534
1818,	103,466,633	1848,	47,044,862
1819,	95,529,648	1849,	63,061,858
1820,	91,015,566	1850,	63,452,773

ANNUAL REDUCTION AND AMOUNT OF PUBLIC DEBT, 1848-1857.

Date.	Debt.	Reduction.	Period of Reduction.
July 1, 1851, . .	$78,797,816	–	– –
July 1, 1852, . .	72,401,087	$6,396,729	Prior to July 1, 1852.
July 1, 1853, . .	67,340,628	5,060,458	1 year.
July 1, 1854, . .	47,242,206	20,098,422	1 year.
July 1, 1855, . .	40,583,631	6,658,574	1 year.
July 1, 1856, . .	32,737,562	7,846,068	1 year.
July 1, 1857, . .	29,060,386	3,677,175	1 year.
Oct. 1, 1857, . .	25,165,164	3,895,232	4 months.

After the panic of 1857, the debt began to increase again, with the following results : —

Balance of debt Oct. 1, 1857, ...	$25,165,154
Issue of 1 year Treasury notes in 1857, ...	20,000,000
Issue August, 1858, and January, 1859, of 5% bonds due 1874, .	20,000,000
Issue 1860, 5% bonds due 1870, ...	7,022,000
Total debt Jan. 1, 1861, ...	$72,187,154

The loan of $10,000,000 of August, 1858, brought from 104½ to 107.03, and the $10,000,000 issued in January, 1859, an average of 102⅝. The 5s of 1860 brought 100 to 101. The Merchants' Bank of Boston took $300,000 between 100 and 100½, and the Provident Institution for savings, $200,000 at 100¼. In December, 1860, $2,000,000 of treasury notes were awarded, mostly at the rate of twelve per cent. per annum.

GOVERNMENT LOANS (THIRD PERIOD, 1861–1887).

On Feb. 23, 1861, $8,000,000 twenty-year six per cent. bonds, due 1881, were issued at an average of 90.15. During the summer, $109,700,000 of the same bonds were awarded, with $139,315,350 7–30 three-year bonds, which were eventually converted into sixes of 1881, and $60,000,000 of demand notes payable in gold. Shortly afterward, $35,364,450 treasury notes, one-third for sixty days, balance two years, were issued at six per cent. interest. Then came the suspension of specie payments, Dec. 30, 1861, and the $500,000,000 5–20 loan in 1862 and 1863, which was subscribed for at par in denominations ranging from $50 upward. From that time forward

to Jan. 20, 1871, numerous loans, for long and short periods, were effected. The following table gives a complete list of bonds and other securities issued on account of the war: —

BONDS AND OTHER SECURITIES ISSUED,
1861-1871.

AUTHORIZING ACTS.	Forms.	When Redeemable.	Rate per cent.	Amount.
Feb. 8, 1861,	Bonds.	Dec. 31, 1880.	6	18,415,000
March 2, 1861,	Treas. notes.	2 yrs. fm. dte.	6	22,463,100
	" "	60 days " "	6	12,896,350
	Bonds.	July 1, 1881.	6	50,000,000
July 17, 1861, Aug. 5, 1861,	Bonds in exchange for Treas. notes.	July 1, 1881.	6	139,321,200
July 17, 1861, Aug. 5, 1861, Feb. 12, 1862,	Treas. notes.	Demand.	none.	60,000,000
July 17, 1861,	Treas notes. 7-30's of 1861.	Aug. 19 and Oct. 1, 1864.	7 3-10	140,094,750
Feb. 25, 1862, March 3, 1864, Jan. 28, 1865,	Bonds, 5-20's of 1862.	May 1, 1867.	6	514,771,600
Feb. 25, 1862, July 11, 1862, March 3, 1863,	Legal tender notes.	Demand.	none.	915,420,031
Feb. 25, 1862, March 17, 1862, July 11, 1862, June 30, 1864,	Temporary Loan.	After 10 days' notice.	4, 5, and 6.	150,000,000
March 1, 1862, May 17, 1862, March 3, 1863,	Certificates of Indebtedness.	1 year after date.	6	561,753,241
March 3, 1863, June 30, 1864,	Bonds, 6's of 1881.	July 1, 1881.	6	75,000,000
March 3, 1863,	Treas. notes	1 yr. fm. date.	5	44,520,000
March 3, 1863,	Treas. notes.	2 yrs. fm. dte.	5	166,480,000
March 3, 1863,	Coin certif's.	Demand.	none.	562,776,400
March 3, 1863,	Compound interest notes.	June 10, 1867. May 15, 1868.	6 c'mp'd	266,595,440
March 3, 1864,	Bonds, 10-40's	March 1, 1874.	5	196,117,300
March 3, 1864,	Bonds, 5-20's of Mar. '64.	Nov. 1, 1869,	6	3,882,500
June 30, 1864,	Bonds, 5-20's of June, 1864.	Nov. 1, 1869,	6	125,561,300
June 30, 1864, March 3, 1865,	Treas. notes.	Aug. 15, 1867. June 15, 1868. July 15, 1868.	7 3-10	829,992,500
March 3, 1865, April 12, 1866,	5-20's of 1865.	Nov. 1, 1870.	6	203,327,250
	Bonds, Consols of 1865.	July 1, 1870.	6	332,998,950
	Bonds, Consols of 1867.	July 1, 1872.	6	379,616,050
	Bonds, Consols of 1868.	July 1, 1873.	6	42,539,350
March 3, 1867, July 25, 1868,	3 per cent certificates.	Demand.	3	85,150,000
July 14, 1870,	Bonds, 5's of 1881.	May 1, 1881.	5	412,306,450
Jan. 20, 1871,	Bonds.	Sept. 1, 1891.	4½	250,000,000
	Bonds.	July 1, 1907.	4	738,768,550

Highest and Lowest Prices of United States Securities, 1861–1887.

[Currency Values.]

Years.	6s of 1881.				6s (5-20 Years), Coupon.									
	Coup.		Reg.		1862.		1864.		1865.		1865, new.		1867.	
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.
1861, .	95¾	83	–	–	–	–	–	–	–	–	–	–	–	–
1862, .	107¼	87½	–	–	–	–	–	–	–	–	–	–	–	–
1863, .	110¾	91¾	–	–	–	–	–	–	–	–	–	–	–	–
1864, .	118	104	–	–	–	–	–	–	–	–	–	–	–	–
1865, .	112⅜	103½	–	–	–	–	–	–	112	99¼	111	98⅞	–	–
1866, .	114⅜	105⅜	–	–	115¼	100⅜	111	101⅜	111⅜	101¼	–	–	–	–
1867, .	113¼	106¼	–	–	115¼	106¼	110⅝	104½	–	–	–	–	109	106¼
1868, .	113⅛	108⅜	–	–	115¼	105⅝	112¾	104¾	–	–	–	–	114⅜	105⅝
1869, .	125	111	125	109	125¾	111⅛	124¾	107⅝	124⅛	110½	122⅜	107¾	122¼	106⅞
1870, .	118¼	112⅜	–	–	116½	107	116	106⅜	116⅓	106⅜	114⅜	106¾	114⅞	107⅛
1871, .	119⅜	110¼	–	–	115⅞	108⅝	115⅞	107⅜	116	108	115	107	115⅞	107⅛
1872, .	120⅝	115¾	117¼	112½	116⅜	109⅜	116¼	110⅜	116⅞	110⅝	117½	109⅞	118¼	111¼
1873, .	123⅜	111½	119	109½	118⅝	105½	120½	106⅜	120½	107⅛	120⅞	109½	120⅞	110
1874, .	122⅜	117	120⅜	115⅜	118¾	110¾	120¾	113	121⅜	111⅞	121	114½	122	115
1875, .	126¼	118¼	123⅞	118	118¾	114¼	121	114⅛	122¾	115¼	124⅛	117⅛	125¼	118⅛
1876, .	124⅛	117	123⅜	112¼	–	–	–	–	118½	108½	121	111⅝	123¼	114½
1877, .	115⅜	109½	114¼	106¼	–	–	–	–	–	–	111¾	105	114⅜	106¾
1878, .	110⅞	105⅛	–	–	–	–	–	–	105⅛	102¼	–	–	108⅜	104¼
1879, .	107⅜	103¼	–	–	–	–	–	–	–	–	–	–	–	–
1880, .	107⅛	103⅞	–	–	–	–	–	–	–	–	–	–	–	–
1881, .	106½	100⅜	–	–	–	–	–	–	–	–	–	–	–	–
1882, .	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Years.	6s (5-20) Coupon.		5s (10-40 Years). 1864.				5s of 1881. Funded.		Currency 6s, 1898.		4½s of '91. Funded.		4s of 1907. Funded.	
	1868.		Coup.		Reg.		Coup.		Reg.		Coup.		Coup.	
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.
1864, .	–	–	103½	92½	–	–	–	–	–	–	–	–	–	–
1865, .	–	–	102⅜	89¼	–	–	–	–	–	–	–	–	–	–
1866, .	–	–	103¼	90	–	–	–	–	–	–	–	–	–	–
1867, .	–	–	104	97½	–	–	–	–	–	–	–	–	–	–
1868, .	112½	107	109⅝	100½	–	–	–	–	–	–	–	–	–	–
1869, .	122¾	107¼	120¼	105	–	–	–	–	–	–	–	–	–	–
1870, .	115	108	114	104¾	–	–	–	–	114¾	109⅛	–	–	–	–
1871, .	116	107⅛	114⅝	107⅛	–	–	–	–	116¾	110	–	–	–	–
1872, .	117⅞	111¼	113⅜	107⅜	111⅞	106⅜	113⅞	107⅜	116⅜	111	–	–	–	–
1873, .	120⅞	109½	115½	105	115½	103½	116¼	106¼	116¼	108	–	–	–	–
1874, .	121¼	116	116⅜	111¼	115⅝	109⅞	117	111	119	114	–	–	–	–
1875, .	125¼	118	119⅞	113⅜	118½	113⅞	119	113⅝	125¼	117½	–	–	–	–
1876, .	124¼	116½	121⅜	111⅛	119⅛	112	119	110⅜	123	120⅞	–	–	–	–
1877, .	117⅞	109⅛	114⅞	107⅛	114⅛	106⅜	112⅝	105¼	126	118	112	103¼	109	101⅛
1878, .	111¼	100⅜	109⅜	103⅛	–	–	107⅞	102¾	122½	117½	105¼	101⅛	102¾	99¼
1879, .	–	–	–	–	–	–	107½	101½	128	119⅜	108	104	103¾	99
1880, .	–	–	–	–	–	–	104⅛	101⅛	130	125	112½	106¼	113¼	103
1881, .	–	–	–	–	–	–	105	100¼	135	127½	115⅜	110¾	118⅞	111¾
1882, .	–	–	–	–	–	–	–	–	135	131	116½	112⅞	121¾	117½
1883, .	–	–	–	–	–	–	–	–	136½	131½	115	112⅛	125	118½
1884, .	–	–	–	–	–	–	–	–	–	–	114⅛	110	124⅛	118¼
1885, .	–	–	–	–	–	–	–	–	–	–	113½	112	124⅜	121⅜
1886, .	–	–	–	–	–	–	–	–	–	–	114	109⅜	129⅜	123

1860; Coupon 6s of 1868, H., 109½, L., 96; Coupon 5s of 1874, H., 104½, L., 89; 1861, H., 98, L., 86; H., 97, L., 75; 1862, H., 107½, L., 85; H., 97½, L., 78; 1863, Coupon 5s of 1874, H., 101, L., 85½.

1882; 5s of 1881, continued at 3½%, H., 103⅜, L., 100¼; 3s, option, H., 103¾, L., 101¾.

1883, 3s, option, H., 104½, L., 100⅛; 1884, H., 101½, L., 100; 1885, H., 105, L., 101; 1886, H., 102½, L., 100.

On Sept. 1, 1865, the total debt was at its highest point, amounting to $2,757,689,571. Its retirement was at once begun, and the total amount on Dec. 1, 1870, had been reduced to $2,334,308,494. This reduction has since gone on steadily each year up to the present time, as will be seen by the following table: —

ANNUAL AMOUNT AND REDUCTION OF PUBLIC DEBT,

1865 to 1887.

DATE.	Debt.	Reduction.	Period of Reduction.
Sept. 1, 1865,	$2,757,689,571	–	–
Sept. 1, 1866,	2,595,638,168	$162,051,403	1 year.
Mar. 1, 1867,	2,530,763,889	64,874,278	6 months.
Mar. 1, 1868,	2,528,113,575	2,650,314	1 year.
Mar. 1, 1869,	2,525,463,260	2,650,315	1 year.
Mar. 1, 1870,	2,438,328,477	87,134,782	1 year.
Jan. 1, 1871,	2,332,067,793	106,260,683	9 months.
Jan. 1, 1872,	2,243,838,411	88,229,382	1 year.
Jan 1, 1873,	2,162,252,338	81,58 ,073	1 year.
Jan. 1, 1874,	2,159,315,326	2,937,011	1 year.
Jan. 1, 1875,	2,142,598,312	16,717,024	1 year.
Jan. 1, 1876,	2,119,832,195	22,766,106	1 year.
Jan. 1, 1877,	2,092,921,241	26,910,953	1 year.
Jan. 1, 1878,	2,045,955,442	46,965,799	1 year.
Jan. 1, 1879,	2,028,648,111	17,307,331	1 year.
Jan. 1, 1880,	2,011,798,' 04	16,849,606	1 year.
Jan. 1, 1881,	1,899,181,735	112,616,768	1 year.
Jan. 1, 1882,	1,765,491,717	133,690,018	1 year.
Jan. 1, 1883,	1,607,543,676	157,948,040	1 year.
Jan. 1, 1884,	1,498,041,723	109,501,953	1 year.
Jan. 1, 1885,	1,418,548,371	79,493,352	1 year.
Jan. 1, 1886,	1,344,776,204	73,772,167	1 year.
Jan. 1, 1887,	*1,341,984,495	*2,791,709	1 year.

* Actual reduction, $101,473,408, explained on next page.

The apparently small reduction of the debt during 1886 is due to the new form of official statement, caused by including the Pacific Railroad bonds, amounting to $64,623,512, as part of the public debt, and charging off the fractional silver currency in the treasury, which had hitherto been reckoned as an available asset. These changes make the debt appear nearly $100,000,000 larger than shown in the amount given above for 1885. The actual reduction for 1886 was $101,473,408.

The following table gives full details of the national debt from 1860 to 1887 : —

ANALYSIS OF THE PUBLIC DEBT OF THE UNITED STATES,

From July 1, 1860, to July 1, 1886.

[000,000 omitted.]

Year ending June 30.	3 per cts.	3 1-2 per cts.	4 per cts.	4 1-2 per cts.	5 per cts.	6 per cts.	7 3-10 per cents.	Total interest bearing debt.
1860, .	–	–	–	–	$43	$21	–	$64
1861, .	–	–	–	–	33	57	–	90
1862, .	–	–	$57	–	30	154	$122	365
1863, .	–	–	105	–	30	431	139	707
1864, .	–	–	77	–	300	842	139	1,359
1865, .	–	–	90	–	245	1,213	671	2,221
Aug.31,								
1865, .	–	–	–	–	269	1,281	830	2,381
1866, .	–	–	121	–	201	1,195	813	2,332
1867, .	–	–	17	–	198	1,543	488	2,248
1868, .	$64	–	–	–	221	1,878	37	2,202
1869, .	66	–	–	–	221	1,874	–	2,162
1870, .	59	–	–	–	221	1,765	–	2,046
1871, .	45	–	–	–	274	1,613	–	1,934
1872, .	24	–	–	–	414	1,374	–	1,814
1873, .	14	–	–	–	414	1,281	–	1,710
1874, .	14	–	–	–	510	1,213	–	1,738
1875, .	14	–	–	–	607	1,100	–	1,722
1876, .	14	–	–	–	711	984	–	1,710
1877, .	14	–	–	$140	703	854	–	1,711
1878, .	14	–	98	240	703	738	–	1,794
1879, .	14	–	741	250	508	283	–	1,797
1880, .	14	–	739	250	484	235	–	1,723
1881, .	14	–	739	250	439	196	–	1,639
1882, .	14	$460	739	250	–	–	–	1,463
1883, .	318	32	737	250	–	–	–	1,338
1884, .	238	–	737	250	–	–	–	1,226
1885, .	208	–	737	250	–	–	–	1,196
1886,*.	158	–	737	250	–	–	–	1,210

* See explanation of change in debt statement above.

Analysis of the Public Debt of the United States — *Continued.*

[000,000 omitted.]

Year ending June 30.	Annual Interest charge.	Debt on which Interest has ceased.	Debt bearing no Interest.	Outstanding Principal.	Cash in Treasury July 1.	Total debt less cash in Treasury.	Debt per capita.	Interest per capita.
1860, .	$3	–	–	$64	$4	$59	$1 91	$0 11
1861, .	5	–	–	90	2	87	2 74	16
1862, .	22	–	$158	524	18	505	15 45	67
1863, .	41	–	411	1,119	8	1,111	33 31	1 25
1864, .	78	–	455	1,815	106	1,709	50 21	2 32
1865, .	137	$1	458	2,680	5	2,674	76 98	3 97
Aug.31, 1865, .	150	1	461	2,844	88	2,756	78 25	4 29
1866, .	146	–	439	2,773	137	2,636	74 32	4 12
1867, .	138	1	428	2,678	169	2,508	69 26	3 84
1868, .	128	1	408	2,611	130	2,480	67 10	3 48
1869, .	125	5	421	2,588	155	2,432	64 43	3 32
1870, .	118	3	430	2,480	149	2,331	60 46	3 08
1871, .	111	1	416	2,353	106	2,246	56 81	2 83
1872, .	103	7	430	2,253	103	2,149	52 95	2 56
1873, .	98	51	472	2,234	129	2,105	50 49	2 35
1874, .	98	3	509	2,251	147	2,104	49 10	2 31
1875, .	96	11	498	2,232	142	2,090	47 44	2 19
1876, .	95	3	465	2,180	119	2,060	45 48	2 10
1877, .	93	16	476	2,205	186	2,019	43 31	2 00
1878, .	94	5	455	2,256	256	1,999	41 67	1 97
1879, .	83	37	410	2,245	249	1,996	40 42	1 69
1880, .	79	7	388	2,120	201	1,919	38 26	1 58
1881, .	75	6	422	2,069	249	1,819	35 22	1 45
1882, .	57	16	438	1,918	243	1,675	31 72	1 09
1883, .	51	7	538	1,884	345	1,538	28 41	95
1884, .	47	19	584	1,830	391	1,438	25 89	86
1885, .	47	4	663	1,863	488	1,375	24 14	83
1886,* .	49	9	536	1,783	492	1,290	22 09	84

* See explanation of change in debt statement on preceding page.

Note. — The annual interest charge is computed upon the amount of outstanding principal at the close of the fiscal year, and is exclusive of interest charge on Pacific Railway Bonds.

1. Five and six per cent. bonds issued under Acts of July 17 and August 5, 1861, March 3, 1863, July 14, 1870, and January 20, 1871, continued at thre and a half per cent.

2. The Temporary Loan, per Act of July 11, 1862, is included in the four per cents. from 1862 to 1868 inclusive, with the exception of the amount outstanding for August 31, 1865, this being the date at which the public debt reached its highest point. This loan bore interest from four per cent. to six per cent., and was redeemable on ten days' notice after thirty days, but being constantly changing, it has been considered more equitable to include the whole amount outstanding as bearing four per cent. interest on an average for the year.

The following table shows the amount of Government bonds owned by the National banks, including those pledged at the Treasury to secure circulation and public deposits: —

UNITED STATES BONDS OWNED BY NATIONAL BANKS.

[000,000 omitted.]

DATE.	HELD AS SECURITY FOR CIRCULATION.					Held for other purposes.	Grand Total.
	6 per ct. Bonds.	5 per ct Bonds.*	4 1-2 per ct. Bonds.	4 per ct. Bonds.	Total.		
July 1, 1882,	$25	$202 7	$32	$97	$357	$43	$400
July 1, 1883,	–	3⅗bonds 200	39	104	363	34	387
July 1, 1885,	–	172	46	111	330	31	361
	Pacifics.						
July 1, 1885,	3	142	48	117	312	32	344
July 1, 1886,	3	107	50	114	275	31	307
Nov. 1, 1886,	3	69	57	115	245	32	271
May 1, 1887,	3	20	64	114	202	32	234

* Continued at 3⅗.

COMPARISON OF CAPITAL AND U. S. BONDS OWNED BY NATIONAL BANKS, 1866 AND 1886.

	Jan. 1866.	Oct. 1886.
Banks,	1,582	2,852
Capital,	$403,000,000	$548,000,000
Bonds owned,	440,000,000	291,000,000
Circulation,	213,000,000	228,000,000

Annual Receipts, Expenditures, Interest Payments and Surplus of the United States,

From 1860 to 1887.

[Expressed in Millions.]

Fiscal Years.	Customs.	Internal Revenue.	Miscellaneous.	Gross Revenue.	Expenses.	Interest.	Surplus.
1860, . .	53	–	3	56	60	3	*7
1861, . .	39	–	2	42	63	4	*25
1862, . .	49	–	3	52	461	13	*423
1863, . .	69	38	6	113	690	25	*602
1864, . .	102	109	53	265	812	54	*601
1865, . .	85	209	39	334	1,220	77	*964
1866, . .	179	309	70	558	388	133	37
1867, . .	176	266	48	491	214	144	133
1868, . .	164	191	50	406	237	140	28
1869, . .	180	158	33	371	192	131	48
1870, . .	195	185	32	411	180	129	102
1871, . .	206	143	34	383	167	126	91
1872, . .	216	131	27	374	160	117	97
1873, . .	188	114	32	334	186	105	43
1874, . .	163	102	24	289	180	107	2
1875, . .	157	110	21	288	171	103	13
1876, . .	148	116	23	287	158	100	29
1877, . .	140	119	19	269	142	97	30
1878, . .	130	111	17	258	134	103	21
1879, . .	137	114	24	274	162	105	7
1880, . .	187	124	23	334	172	96	66
1881, . .	198	135	27	361	178	83	100
1882, . .	220	146	37	404	187	71	146
1883, . .	215	145	38	398	206	59	133
1884, . .	195	122	32	349	190	55	104
1885, . .	181	112	30	324	209	51	63
1886, . .	193	117	27	336	192	51	94

* Deficit.

Annual Appropriations made by Congress

From 1878 to 1887.

	Fiscal Year 1878.	Fiscal Year 1879.	Fiscal Year 1880.	Fiscal Year 1881.	Fiscal Year 1882.
To Supply Deficiencies,	$2,547,186	$15,213,259	$4,633,824	$6,118,085	$5,110,862
Legislative, Executive and Judicial Expenses,	15,756,774	15,863,694	16,136,230	16,532,009	17,797,398
Sundry Civil Expenses,	17,079,256	24,968,590	19,724,869	22,503,508	22,011,223
Support of the Army,	No appro.	51,279,679	26,797,300	26,425,800	26,687,800
Naval Service,	13,589,933	14,153,432	14,023,469	14,405,798	14,566,038
Indian Service,	4,827,666	4,734,876	4,713,479	4,657,263	4,587,867
Rivers and Harbors,	No appro.	8,322,700	9,577,495	8,976,500	11,451,300
Forts and Fortifications,	275,000	275,000	275,000	550,000	575,000
Military Academy,	286,604	292,805	319,547	316,234	322,435
Post-Office Department,	2,939,725	4,222,275	5,872,376	3,883,420	2,152,258
Pensions,	28,533,000	29,371,574	56,233,200	41,644,000	68,232,307
Consular and Diplomatic Service,	1,146,748	1,087,535	1,097,735	1,130,335	1,191,435
Miscellaneous,	1,425,091	2,226,390	2,995,124	4,959,332	1,128,006
Totals,	88,356,983	172,016,809	162,404,648	155,830,841	179,579,000

	Fiscal Year 1883.	Fiscal Year 1884.	Fiscal Year 1885.	Fiscal Year 1886.	Fiscal Year 1887.
To Supply Deficiencies,	$9,853,869	$2,832,680	$4,385,836	[1]$3,332,717	$13,572,883
Legislative, Executive and Judicial Expenses,	20,322,908	20,763,843	21,556,902	21,495,661	20,809,781
Sundry Civil Expenses,	25,425,479	23,713,404	22,346,750	25,961,904	22,650,658
Support of the Army,	27,032,099	24,681,250	24,454,450	24,014,052	23,753,057
Naval Service,	14,903,559	15,954,247	[2] 8,931,856	21,280,767	16,489,557
Indian Service,	5,219,604	5,388,656	5,903,151	5,773,328	5,561,263
Rivers and Harbors,	18,988,875	No appro.	14,948,300	No appro.	14,464,900
Forts and Fortifications,	375,000	670,000	700,000	725,000	59,877
Military Academy,	335,557	318,657	314,563	309,992	297,805
Post-Office Department,	1,902,178	Indefinite	Indefinite	Indefinite	Indefinite
Pensions,	116,000,000	86,575,000	20,810,000	60,000,000	76,075,200
Consular and Diplomatic Service,	1,256,655	1,296,255	1,225,140	1,242,925	1,364,065
Agricultural Departm't,	427,280	405,640	480,190	580,790	654,715
Expenses of District of Columbia,[3]	3,496,060	3,505,495	3,594,256	3,622,683	3,721,051
Miscellaneous,	5,888,994	1,806,439	7,800,004	2,268,383	10,184,571
Totals,	251,428,117	187,911,566	137,451,398	170,608,114	209,659,383

[1] Not including $6,150,062 appropriated for the Naval service for six months, ending June 30, 1885.

[2] For six months ending December 31, 1884.

[3] Note. — One half of this amount is by law paid by the U. S. Government; the other half must be paid into the Treasury by District taxes, and Congress appropriates the full sum.

The Public Debt, June 1, 1887.

INTEREST BEARING DEBT.

Rate of Interest.	When Redeemable.	Interest Payable.	Amount Outstanding.
3%	Option, U. S.,	A., N., F., & M.,	$19,716,500
4½%	Sept. 1, 1891,	M., J., S., & D.,	250,000,000
4%	July 1, 1907,	J., A., J., & O.,	737,800,150
4%	Refunding Certificates,	J., A., J., & O.,	175,650
3%	Navy Pension Fund,	January and July,	14,000,000
6%	Pacific R.R. Bonds, 1895–1899,		64,623,512
	Total Interest Bearing Debt,		$1,086,315,812

The $19,716,500 of 3 per cents. are all registered. Of the 4½s, $206,482,750, and of the 4s, $621,815,550 are registered and the balance coupons.

DEBT ON WHICH INTEREST HAS CEASED SINCE MATURITY.

Miscellaneous — Interest formerly from 3 to 7 3-10%,	$6,541,295 26

DEBT BEARING NO INTEREST.

Old Demand Notes, July 17, 1861; Feb. 12, 1862,		$57,130 00
Legal Tender Notes, Feb. 25, 1862; July 11, 1862; Mar. 3, 1863,		346,681,016 00
Certificates of Deposit June 8, 1872,	$9,400,000 00	
Less Amount held in Treasurer's Cash,	410,000 00	
		8,900,000 00
Gold Certificates, Mar. 3, 1863; July 12, 1882,	$123,062,335 00	
Less Amount held in Treasurer's Cash,	32,101,358 00	
		94,960,977 00
Silver Certificates, Feb. 28, 1878,	$144,432,492 00	
Less Amount held in Treasurer's Cash,	5,289,164 00	
		139,143,328 00
Fractional Currency, July 17, 1862; Mar. 3, 1863; June 30, 1864,	$15,323,256 37	
Less Amount estimated as lost or destroyed,	8,375,934 00	
		6,947,322 37
Total Non-Interest Bearing Debt,		$592,779,773 00

RECAPITULATION.

Interest Bearing Debt,	$1,086,315,812 00
Debt on which Interest has ceased since maturity,	6,541,295 26
Debt Bearing no Interest,	592,779,773 00
Interest due and unpaid,	11,905,271 33
Total Debt,	$1,697,542,151 96
Total Debt less Cash in Treasury, June 1,	$1,296,281,462 19

CHAPTER II.

THE CREDITS OF FOREIGN NATIONS.

The Rate of Return to Investors in English, French, German, Spanish, Austrian, Turkish, Egyptian, Chinese and Japanese Government Securities — The Credit of the United States. — Its Growth in Population and Wealth. — The Burden of Armies and Navies to European Nations.

The Rate of Returns to Investors in English, French, German, Spanish, Austrian, Turkish, Egyptian, Chinese, and Japanese Government Securities.

COUNTRIES.	Interest.	Yield to Investor.[1]	Date of Redemption.	Latest Price in April.	FIRST FOUR MONTHS OF 1887.	
					Highest.	Lowest.
Argentine Confederation, —	per cent.	per cent.				
Loan of 1868,	6	5.95	1889,	102.75	104	100
Buenos Ayres, of 1824,	6	6.2	By purchase.	97.5	97.5	97.5
Entre Rios, of 1880,	6	6.6	1919,	94.75	95.5	89
Austria,[2] —						
Silver Rentes,	5	6.85	Irredeemable.	66	68	61
Gold Rentes,	4	3.77	Irredeemable.	89¼	90	84½
Australasia, —						
New South Wales, Loan of 1885,	3½	3.7	1924,	95⅜	96¾	92½
New Zealand,	4	4.15	1929,	98	98½	94
Queensland,	4	3.92	1913–15,	103	103	99½
South Australia, inscribed,	4	3.84	1916–35,	102⅞	105	99
Tasmania,	4	3.91	1911,	103	103	99½
Victoria,	4	3.64	1913,	105⅜	106	103½
West Australia,	4½	4.11	1922,	106x	107	104
Belgium, Loan of 1874 (Rentes),	3	3.62	Rentes,	93	94	90¾
Brazil, Loan of 1865,	5	4.94	1902,	100¾	101½	98

[1] At price per ultimo April, including redemption.

[2] Income tax, 16⅔, is deducted from dividend coupons.

RATE OF RETURNS, ETC. — *Continued.*

COUNTRIES.	Interest.	Yield to Investor.[1]	Date of Redemption.	Latest Price in April.	FIRST FOUR MONTHS OF 1887. Highest.	Lowest.
	per cent.	per cent.				
Britain, Great, Consols,	3	2.97		–	102¾	99¾
New 2½s 1894,	2½	2.81	1894,	–	89	88
Egyptian Loan, guaranteed by England.[2]	3	3.00		100	100	97½
Bank of England Stock, dividend last year.	9½	3.24		–	299	294
Bank of Ireland Stock, 2 last dividends.	11	4		–	291	273
British Guiana, Scrip,[2]	4	4.0		100	100	98
Canadian Dominion, —						
Intercolonial Railroad, —						
British Guarantee,	4	3.25	1903-8,	113	113	110
Canadian Guarantee,	5	4.07	1903,	111¼	114	111
Cape of Good Hope, Consols,	4	3.86	1936,	102¾	102⅞	98½
Ceylon (redeemable by 1% annually from 1886).	4	3.87		104	105	102
Chili, Conversion Loan,[2]	4½	4½	1887,	98½	101	100
China (red. by drawings fr 1891),	6	4.35	1895,	113	113¼	108
Colombia, Defaulter, with Coupon for 1879.	4.75	–	1878,	26½	31½	25½
Costa Rica B Bonds,	5	7.81	1898,	65	66	56½
Danubian Principalities (Roumania), 1867.	8	5.55	1890,	107	112½	106
Denmark (red. at State option; no business done in England).	4	–		–	–	–
Ecuador, Defaulter (new consolidated).[3]	1	–		11½	12	9½
Egypt, less 5% Income Tax, Unified.[4]	4	5.36		76¼	76½	68½
British Guarantee,[2]	3	3.00		100	100	97½
Fiji, Loan of 1881 (redemption optional by 1% Sinking Fund).	4½	4.42		104¾	105	103
France, Loan of 1883 (Rentes),	4½	4.17		108½	108¾	104¾
Redeemable,	3	3.62	1953,	83¾	84¾	80½
Not redeemable,	3	3.8		79	82	75½
German Empire,	3½	3½		–	99.60	–
Greece. Independence Loan Conversion, 1879.	5	7.31	1899,	83	83½	76
Guatemala, Defaulter, of 1869,[5]	6	–	1888,	37	37	22½
Hindustan Stock (payable in London).	4	3.95	After 1888,	103⅝	104	100¾
Debenture Bonds (ditto),	3½	3.50	1889-91,	100	100½	99½
Enfaced Paper (payable in rupees in India).	4	4.55	3 mos. notice.	67⅞	71½	66
Holland,[4]	2½	3.47		72¾	75	71½
Direct Government Issue,[4]	3½	3.55		97¾	99	97¾

[1] At price per ultimo April, including redemption.

[2] Redeemable by purchase or drawings.

[3] Last dividend paid was that for 1867.

[4] Redeemable by purchase.

[5] 4.5% Sinking Fund not applied.

RATE OF RETURNS, ETC. — *Continued.*

COUNTRIES.	Interest.	Yield to Investor.[1]	Date of Redemption.	Latest Price in April.	FIRST FOUR MONTHS OF 1887. Highest.	Lowest.
	per cent.	per cent.				
Honduras R.R. Loan, Defaulter (no int. paid since July, 1872).	10	–	1885, .	9	19½	5½
Hungary, Gold Rentes, . .	4	5.06	Rentes, .	80¾	84½	73
Italy, less 13.2% Income Tax, Rentes, 1861.	5	4.45	Irredeemable.	96⅞	100¼	90¼
Jamaica, 1881-82, ...	4	3.95	1927, .	102	102	100
Japan, 1873, ...	7	4.68	1898, .	116	117½	110
Mauritius, Consols, . . .	4	3.95	1922, .	102	102	99
Mexico, 1851, Defaulter, . .	3	–	Irredemable.	29¼	29½	24
1864, Defaulter, . . .	3	–	Irredeemable.	13¼	13¼	11⅞
Natal, 1884, ...	5	4.39	1924, .	113	114	104
Nicaragua Scrip (all paid), .	6	6.77	1919, .	92	92	88
Norway, 1880, ...	4	3.77	1934 or earlier.	–	105	102
Orange Free State (repayable in 20 annual drawings).	6	5.74	1905, .	104½	105	102
Paraguay, Defaulter (June, 1874, unpaid).	8	–	1893, .	18½	18½	15½
Peru, Consols, Defaulter (no payment since 1872).	5	–	1898, .	13½	14	10¾
Portugal (irredeemable), . .	3	5.37	. . .	56	56¼	49½
Of 1882, ...	5	5.42	1961, .	93½	94¾	91½
Prussia, Consols, 1880, . .	4	3.86	After Jan., 1885.	–	105	101
Russia, Anglo-Dutch Loan of 1866.	5	5.27	1904, .	97 x	99	92
Moscow Jaroslaw R. R. Loan,	5	4.96	1945, .	103	103	99
San Domingo, 1869, Defaulter (no int. paid since July, '72).	6	–	1894, .	16	17	13½
Spain, 1882, External Debt (irredeemable).	4	6.16	. . .	64⅜	66½	59½
Quicksilver Mortgage, 1870, .	5	4.62	1900, .	104	105	102
Sweden, 1880, ...	4	3.8	1895-1930,	104 x	105	102
Trinidad, 1880, ...	4	3.89	1883-1939,	103	103	98
Turkey, General Debt, . .	1	7.69	1% Sinking Fund.	13	14	12
English and French Guarantee,	4	3.76	1900, .	107	109	106
Ottoman Defence Loan, 1877,	5	5.9	By purchase.	85¼ x	86¼	78½
United States (in Gold in N. Y.),	3	2.91	By drawings.	103	104⅛	102¾
U. S. A., Funded, 1876,[2] . .	4½	4.01	1891, .	112½[3]	113½	110½
" " 1877,[2] . .	4½	3.08	1907, .	131[4]	132	130
Uruguay, Unified, 1883, . .	5	8.77	. . .	57	57½	44¼

[1] At price per ultimo April, including redemption.

[2] Redeemable by drawings not before 1891.

[3] New York quotation, May 14: highest, 110¼; lowest, 109¼.

[4] New York quotation, May 14: highest, 129⅜; lowest, 129¼.

RATE OF RETURNS, ETC. — *Concluded.*

COUNTRIES.	Interest.	Yield to Investor.*	Date of Redemption.	Latest Price in April.	First Four Months of 1887.	
					Highest.	Lowest.
	p. ct.	p. ct.				
Virginia, Defaulter (unpaid since 1867), ...	5	–	. . .	–	38	33
Massachusetts, 1871-72, Sterling,	5	3.61	1889-91, .	104	108½	103
Venezuela, New Consols, . .	3	7.5	By purchase.	40	41	37

THE CREDIT OF THE UNITED STATES.

United States four per cent. bonds stood between 129 and 130 at the date of the compilation of the above table. At 130.92, or, in round numbers, 131, with 20 years to run, they net the investor, according to the treasury department tables, just 2¼ per cent. per annum. The four and one-half per cent. bonds, with 4¼ years to run, also net 2¼ per cent. to the purchaser, at 109.94, or say 110 — about the May price.

The credit of the United States ranks highest among the nations of the earth, not because of the advantages given to national banks in permitting them the issue of bills against assets of government bonds, for national banks do not now hold a larger proportion of the interest-bearing debt than they did twenty years ago. Our credit ranks first because we are now first in everything that should give credit, first in wealth, first in production of brain and hand, — in invention, manufactures and agriculture, — first in the excess of national revenues over expenditures, and first in the economy of our national defences.

From the American Almanac we take the following tables, as fitly supplementing those we have compiled above. Of the forty-two nations whose debts and revenues are here recorded, just one-half have expenditures in excess of receipts, and the annual surplus of the United States exceeds the aggregate of all other nations.

*At price per ultimo April, including redemption.

Debts, Revenues, Expenditures, and Commerce of Nations.

[00,000 omitted.]

Countries.	Fiscal Year.	Public Debt.	Revenue.	Expenditures.	Imports.[1]	Exports.[1]
Argentine Republic,	1885	$148,2	$34,6	$43,4	$87,6	$33,[illegible]
Australasia,[2]	1885	704,5	119,6	120,1	316,8	257,7
Austria-Hungary,	1885	1,493,6	62,8	63,1	312,4	350,2
Austria proper,	1885	331,3	205,0	271,4	(In Austria-Hungary.)	
Hungary proper,	1885	504,8	159,9	169,2	(In Austria-Hungary.)	
Belgium,	1886	409,3	61,1	63,1	283,6	267,8
Bolivia,	1885	21,9	3,4	4,7	6,1	9,3
Brazil,	1885	431,5	75,7	80,2	109,1	113,7
Canada,	1885	264,7	32,7	35,0	113,4	92,9
Chili,	1886	63,4	40,2	39,8	52,8	68,0
China,[3]	1884	39,4	121,5	110,2	134,3	98,1
Colombia, U. S. of,	1884	21,5	4,1	3,6	11,5	14,8
Denmark,	1885	27,9	15,8	13,2	76,7	49.9
Ecuador,	1885	16,5	4,2	4,1	6,0	6,1
Egypt,	1882	518,6	45,0	47,6	41,8	63,3
France,	1886	6,148,9	757,3	763,8	905,1	670,0
Germany,	1885	140,7	184,3	156,5	772,1	716,5
German States,	1883	1,815,0	282,4	471,5	(In German Empire.)	
Great Britain,	1886	3,711,2	448,4	461,1	1,950,0	1,479,8
Greece,	1884	90,4	16,2	17,0	27,2	18,8
Hawaii,	1885	1,0	3,2	3,2	3,8	9,0
India, British,	1885	834,6	358,4	355,3	347,9	425,3
Italy,	1886	2,246,9	342,5	358,9	515,3	267,6
Japan,	1885	567,3	56,6	56,6	29,1	33,2
Mexico,	1886	156,1	31,7	26,3	36,2	41,8
Netherlands,	1886	426,4	46,6	52,3	423,5	318,4
Norway,	1885	30,0	12,6	10,9	37,6	26,9
Paraguay,	1885	4,5	1,2	1,1	1,3	1,4
Persia,	1885	No debt.	8,3	7,7	29,5	22,2
Peru,	1884	242,5	7,0	9,6	10,5	7,4
Portugal,	1885	476,4	35,4	38,4	37,7	24,0
Roumania,	1886	140,0	27,6	17,1	59,6	36,9
Russia,	1885	3,669,9	559,6	489,4	304,4	394,1
Servia,	1885	52,5	9,5	9,2	10,5	7,5
Siam,	1884	–	4,0	3,8	6,2	11,2
Spain,[4]	1885	190,0	180,2	179,2	110,7	120,4
Sweden,[5]	1885	65,2	22,6	21,9	83,2	60,2
Switzerland,	1885	6,5	9,6	9,2	151,9	132,2
Turkey,[6]	1885	744,8	59,2	76,6	87,2	58,2
United States,	1886	1,783,4	336,4	242,4	674,0	751,9
Uruguay,	1885	62,3	12,1	12,0	25,2	25,2
Venezuela,[7]	1885	21,8	5,8	7,8	17,2	19,6
Total debts,		$28,625,9				

[1] Including merchandise, specie and bullion.

[2] Including New South Wales, New Zealand, Queensland, South Australia, Tasmania, Victoria and Western Australia

[3] Foreign debt only.

[4] Spain being wholly unable to meet the interest on its debt, it was "converted" in 1881–82 from an aggregate of $2,560,000,000 into new securities to the amount of $1,290,000,000 at four per cent.

[5] The debt of Sweden is wholly offset by the value of the State railways, built by the Government.

[6] The Turkish Government, by arrangement with a committee of bondholders, "scaled" its public debt in 1881 from $1,264,009,425 to $532,186,170, pledging its revenues for payment.

[7] Venezuela's foreign debt, which had grown to over $54,000,000 in 1878, when interest payments were resumed, was "consolidated" into new four per cent. bonds in 1881.

Armies of the World.

Countries.	Population.	Regular Army.	War Footing.	Annual Cost of Army.	Cost to each Inhabitant.	Per cent. of total Expenditure.
Austria-Hungary,	37,7	284,071	1,078,904	$49,116,248	$1 30	78.14
Argentine Republic,	2,4	7,518	357,518	5,800,000	2 41	17.74
Belgium,	5,5	47,084	224,637	9,208,046	1 66	14.08
Bolivia,	2,0	3,021	6,000	2,148,000	1 03	65.08
Brazil,	10,1	13,500	32,000	7,466,120	73	9.72
Canada,	4,3	2,000	700,152	3,840,000	88	13.36
Chili,	2,4	13,926	65,752	16,326,095	–	70.92
China,	434,6	300,000	1,200,000	75,000,000	17	68.03
Colombia,	2,9	4,000	30,740	–	–	–
Cuba,	1,5	25,653	–	–	–	–
Denmark,	2,0	35,727	50,522	2,461,955	1 17	16.62
Egypt,	17,4	10,900	43,000	–	–	–
France,	37,4	529,269	3,753,164	121,061,600	3 23	16.99
Germany,	45,1	445,402	1,492,104	84,968,140	1 88	57.52
Great Britain,	35,2	181,971	641,753	90,901,630	2 57	20.89
Greece,	1,9	29,368	35,188	3,312,140	1 67	22.12
Guatemala,	1,2	2,180	34,409	–	–	–
Hawaii,	–	400	–	–	–	–
India, British,	252,5	190,476	380,000	87,201,250	34	24.52
Italy,	28,4	750,765	1,985,619	41,098,611	1 44	13.20
Japan,	36,7	37,790	120,982	9,263,713	25	14.78
Luxembourg,	2	377	–	75,680	36	5.65
Mexico,	9,3	22,330	–	8,252,352	87	24.76
Netherlands,	4,0	65,113	165,010	8,464,000	2 08	15.12
Nicaragua,	2	703	10,303	–	–	–
Norway,	1,8	18,750	241,600	1,628,440	90	14.89
Persia,	7,0	30,000	105,500	3,800,000	54	42.22
Peru,	3,0	13,200	70,000	–	–	–
Portugal,	4,5	33,994	78,024	5,099,105	1 12	14.54
Roumania,	5,3	19,512	150,000	5,463,550	1 01	20.90
Russia,	98,3	780,081	2,300,000	125,508,474	1 27	27.34
Servia,	1,7	18,000	210,000	2,072,890	1 21	29.80
Spain,	16,6	152,895	400,000	24,524,415	1 47	13.93
Sweden,	4,5	40,758	194,940	4,322,860	94	19.97
Switzerland,	2,8	117,500	215,000	3,341,260	1 17	39.00
Turkey,	25,0	160,417	610,200	23,841,064	95	33.81
United States,	50,1	26,383	3,165,000*	39,429,603	78	16.15
Uruguay,	4	4,500	27,700	–	–	–
Venezuela,	2,0	3,000	60,000	–	–	–

Note.—The last column shows the ratio which the military expenditure bears to the total annual expenditure of each nation.

* Militia force *plus* the regular army.

The Navies of the World.

Countries.	No. of Vessels.	No. of Men.	Cost of Navy.	Countries.	No. of Vessels.	No. of Men.	Cost of Navy.
			$				$
Argentine Republic,	33	991	2,670,000	Italy, . .	72	15,140	10,310,741
Austria-Hungary, .	68	7,222	3,838,460	Japan, . .	31	5,551	2,024,552
Belgium, . . .	10	172	–	Mexico, . .	8	–	–
Brazil, . . .	48	4,984	5,560,291	Netherlands, .	165	3,436	5,170,886
Canada (Dominion),	7	–	–	Norway, .	46	915	420,680
Chili, . . .	10	2,225	4,359,893	Peru, . .	–	–	–
China, . . .	56	–	–	Portugal, .	39	3,200	1,607,411
Denmark, . .	44	1,122	1,575,577	Roumania, .	10	530	–
Egypt, . . .	13	–	–	Russia, . .	373	28,975	19,911,580
France, . . .	302	39,365	40,989,363	Spain, . .	124	21,678	6,719,046
Germany, . .	91	15,200	6,752,094	Sweden, . .	133	7,723	1,418,420
Great Britain and Ireland, . .	246	57,250	53,643,905	Turkey, . .	49	40,392	3,000,000
Greece, . . .	16	2,637	833,708	United States,	93	12,204	17,292,601
				Venezuela, .	4	200	–

The Wealth and Population of the United States.

In 1850, the total wealth of the United States was but $8,430,000,000 [£1,686,000,000], while that of the United Kingdom exceeded $22,500,000,000 [£4,500,000,000], or nearly three times that sum. Thirty short years sufficed to reverse the positions of the respective countries. In 1882, the Monarchy was possessed of a golden load of no less than eight thousand seven hundred and twenty millions sterling. Just pause a moment to see how this looks strung out in cold figures; but do not try to realize what it means, for mortal man cannot conceive it. Herbert Spencer need not travel so far afield to reach the unknowable. He has it right here under his very eyes. Let him try to know the import of this, — $43,600,000,000 [£8,720,000,000]. It is impossible. But, stupendous as this seems, it is exceeded by the wealth of the Republic, which in 1880, two years before, amounted to $48,950,000,000 [£9,790,000,000]. What a mercy we write for 1880; for had we to give the wealth of one year later, another figure would have to be found and added to the interminable row. America's wealth to-day greatly exceeds ten thousand millions sterling. Nor is this altogether due to her enormous agricultural resources, as may at first glance be thought; for all the world knows she is first among nations in agriculture. It is largely

attributable to her manufacturing industries; for, as all the world does not know, she, and not Great Britain, is also the greatest manufacturing country. In 1880, British manufactures amounted in value to eight hundred and eighteen millions sterling; those of America to eleven hundred and twelve millions, — nearly half as much as those of the whole of Europe, which amounted to twenty-six hundred millions. Thus, although Great Britain manufactures for the whole world, and the Republic is only gaining, year after year, greater control of her own markets, Britain's manufactures in 1880 were not two-thirds the value of those of the one-century-old Republic, which is not generally considered a manufacturing country at all.

France, with her fertile plains and sunny skies, requires a hundred and sixty years to grow two Frenchmen where one grew before. Great Britain, whose rate of increase is greater than that of any other European nation, takes seventy years to double her population. The Republic has repeatedly doubled hers in twenty-five years. In 1831, Great Britain and Ireland contained twenty-four millions of people, and fifty years later [1881] thirty-four millions. France increased during the same period from thirty-two and a half to thirty-seven and a half millions The Republic bounded from thirteen to fifty millions. England gained ten, France five, the United States thirty-seven millions. Thus the Republic in one-half century added to her numbers as many as the present total population of France, and more than the present population of the United Kingdom. Think of it! a Great Britain and Ireland called forth from the wilderness, as if by magic, in less than the span of a man's few days upon earth, almost

> "As if the yawning earth to heaven
> A subterranean host had given."

Truly the Republic is the Minerva of nations; full-armed has she sprung from the brow of Jupiter Britain. The thirteen millions of Americans of 1830 have now increased to fifty-six millions, — more English-speaking people than exist in all the world besides, more than in the United Kingdom and all her colonies, even were the latter doubled in population. — *Carnegie's Triumphant Democracy.*

CHAPTER III.

STATE AND MUNICIPAL INDEBTEDNESS.

General Notes on State Indebtedness. — State, Territorial, County, and Municipal Debts in 1880. — State Debts and Valuations, January 1, 1887. — Approximate Credit of States. — Debts, Population, and Debt per Capita of Forty Cities of the United States — Average Rates of Interest Paid and Credits of Leading Cities of the United States. — Growth of American Cities of 50,000 Population since 1790. — Indebtedness of Foreign Cities.

State Debts.

The debts of the Northern States were contracted largely for war purposes between 1861 and 1866, and many of them have been greatly reduced or entirely extinguished. But the debts of the Southern States, although not changed much during the war, were recklessly increased during the reconstruction period. Several States have adopted one scaling process after another, and some have repudiated their bonds altogether.

States are free from prosecution for payments of their debts under the interpretation by the United States Supreme Court of the Eleventh Amendment to the Constitution, and hence the bonds became debts of honor solely. Neither individual creditors nor other States can bring suit against a defaulting commonwealth. Virginia has made a contract with its bondholders which cannot be annulled by legislation, in making bond coupons receivable for taxes ; but subsequent legislation has prescribed methods of making coupons available for this

purpose so vexatious as to almost annul their value. Suits on this point have twice been carried to the United States Supreme Court, and the validity of the coupons as a legal tender for taxes has been reaffirmed. The large body of Virginia tax-payers, however, still pay their taxes in money.

The foreign holders of Virginia bonds have lately renewed their resolution to maintain and push their rights before the United States courts, and still steadfastly resist the Riddleberger settlement. They are willing to accept a compromise based upon the available revenue, after providing for the constitutional appropriations for government, schools, etc., without raising the present rate of taxation. The question is whether such a compromise will be accepted by the people. Efforts are also being made to induce West Virginia to assume her portion of the old State debt, but the authorities of the two States differ as to the amount of the former's liability.

NET STATE, TERRITORIAL, COUNTY, AND MUNICIPAL DEBTS OF THE UNITED STATES, WITH POPULATION AND DEBT PER CAPITA, 1880.

STATES AND TERRITORIES.	1880. [000 omitted.]					Total Debt per capita, 1880.
	Net State Debt.*	Net County Debt.*	Net Municipal Debt.†	Total Debt.*	Population.	
Alabama, . .	$9,071	$1,703	$3,953	$14,728	1,262	$11.67
Arkansas, . .	4,039	3,135	763	7,938	802	9 89
California, . .	3,306	7,312	6,136	16,755	864	19.38
Colorado, . .	212	2,492	889	3,594	194	18.49
Connecticut, . .	4,967	101	16,932	22,001	623	35.33
Delaware, . .	889	44	1,421	2,346	146	16.01
Florida, . . .	1,134	435	1,055	2,626	269	9.75
Georgia, . . .	9,951	181	9,548	19,681	1,542	12.76
Illinois, . . .	No debt.	14,181	30,999	45,180	3,077	14.68
Indiana, . . .	4,998	4,048	9,307	18,353	1,978	9.28
Iowa, . . .	370	2,992	4,599	7,962	1,624	4.90

* The aggregate of debt, after deducting sinking fund.

† Including township and school district debt.

NET DEBTS OF THE UNITED STATES, ETC. — *Concluded.*

STATES AND TERRITORIES.	1880. [000 omitted.] Net State Debt.*	Net County Debt.*	Net Municipal Debt.†	Total Debt.*	Population.	Total Debt per capita, 1880.
Kansas,	1,087	7,950	6,967	16,005	996	16.07
Kentucky,	1,089	5,877	8,010	14,977	1,648	9.08
Louisiana,‡	23,437	1,107	18,320	42,865	939	45.60
Maine,	4,682	451	17,272	22,406	619	34.53
Maryland,	7,627	1,377	1,891	10,896	935	11.65
Massachusetts,	20,159	1,371	69,753	91,283	1,783	51.19
Michigan,	No debt.	896	7,906	8,803	1,636	5.38
Minnesota,	2,565	901	5,009	8,476	780	10.86
Mississippi,	379	1,134	498	2,013	1,131	1.78
Missouri,	16,259	11,923	29,249	57,431	2,168	26.48
Nebraska,	375	5,120	1,929	7,425	452	16.41
Nevada,	–	891	133	1,024	62	16.45
New Hampshire,	3,561	779	6,383	10,724	346	30.91
New Jersey,	813	6,668	42,064	49,547	1,131	43.80
New York,	7,536	12,399	198,787	218,723	5,082	43.03
North Carolina,	5,706	1,524	963	8,194	1,399	5.85
Ohio,	5,732	2,962	40,058	48,753	3,198	15.24
Oregon,	511	211	125	848	174	4.86
Pennsylvania,	20,716	9,781	83,537	114,034	4,282	26.63
Rhode Island,	1,332	–	11,270	13,102	276	47.38
South Carolina,	6,639	1,573	5,132	13,345	995	13.41
Tennessee,	27,440	3,060	6,886	37,387	1,542	24.25
Texas,	5,566	2,499	3,538	11,604	1,591	7.29
Vermont,	4	23	4,324	4,352	332	13.10
Virginia,	29,345	1,283	11,471	42,099	1,512	27.83
West Virginia,	No debt.	592	920	1,513	618	2.45
Wisconsin,	2,252	2,292	7,331	11,875	1,315	9.03
Aggregate,	$234,257	$121,285	$675,348	$1,030,891	49,371	–
TERRITORIES.						
Arizona,	–	$353	$24	$377	40	$9.33
Dakota,	–	961	37	998	135	7.39
Dist. of Columbia,	–	–	22,675	22,675	177	127.66
Idaho,	$88	143	3	235	32	7.22
Montana,	64	659	35	759	39	19.41
New Mexico,	–	84	–	84	119	.71
Utah,	9	15	91	116	143	.81
Washington,	–	204	34	239	75	3.19
Wyoming,	17	169	19	205	21	9.88
Aggregate,	$179	$2,591	$22,921	$25,692	784	–
Total Aggregate,	$234,436	$123,877	$698,270	$1,056,584	50,155	$21.07

* The aggregate of debt, after deducting sinking fund.

† Including township and school district debt.

‡ Old debt (1874), now being refunded.

Net Debts, Valuation, and Taxes of Thirty-eight States.

Latest Official Statements to Jan. 1, 1887.

STATES.	Date of Statement.	Amount of State Debt Funded.	Amount raised by Taxation last Year.	Amount of Taxable Property as Assessed.		State Tax on $100.
				Real.	Personal.	
		[000 omitted.]				
		Dollars.	Dollars.	Dollars.	Dollars.	Cents.
Alabama,	Oct. 1, '86,	12,192	1,041	102,038	70,470	65
Arkansas,	Oct. 1, '85,	5,108	966	78,444	48,382	40
California,[1]	July 1, '84,	3,203	3,861	558,373	167,338	49 7-10
Colorado,	Dec. 1, '86,	None.	534	130,000*		40
Connecticut,	Dec. 1, '84,	4,272	1,463	243,858	104,916	12
Delaware,[2]	Dec. 22, '83,	864	117	–	–	–
Florida,	Jan. 1, '85,	503	377	60,042*		40
Georgia,	Oct. 1, '86,	8,210	1,351	183,366	146,123	35
Illinois,	Oct. 1, '85,	None.	3,000	578,229	218,111	42
Indiana,	Nov. 1, '85,	6,008	2,889	566,521	227,004	14½
Iowa,[3]	July 1, '85,	–	1,148	489,660	135,045	25
Kansas,[4]	July 1, '86,	847	1,082	189,635	87,945	41½
Kentucky,[5]	July 1, '86,	1,174	907	294,194	98,371	52¼
Louisiana,	Jan. 1, '86,	15,100	1,567	149,145	63,579	10
Maine,	Jan. 1, '85,	5,316	1,301	265,978*		40
Maryland,[6]	Oct. 1, '85,	10,970	887	473,452*		18¾
Massachusetts,[7]	Jan. 1, '86,	31,432	2,005	1,287,993	494,355	8 53-100
Michigan,	Oct. 1, '86,	243	1,202	849,921*		12 7-10
Minnesota,[8]	Aug. 1, '86,	4,026	658	386,547	79,204	18
Mississippi,[9]	Jan. 1, '86,	3,178	605	87,282	35,454	25
Missouri,	Nov. 9, '85,	14,309	2,839	496,730	229,044	40
Nebraska,	Dec. 1, '86,	499	1,117	163,499*		76¼
Nevada,	Nov. 22, '86,	409	516	43,526*		90
New Hampshire,	June 1, '86,	2,926	400	130,298	101,360	19
New Jersey,	Nov. 1, '85,	1,596	1,375	565,537*		25
New York,[10]	Oct. 1, '86,	9,327	9,512	2,899,899	324,783	29 6-20
North Carolina,	Dec. 1, '86,	15,421	691	124,135	77,087	37½
Ohio,	Nov. 15, '85,	3,720	4,621	1,160,165	509,903	29
Oregon,	Jan. 1, '85,	110	239	77,188*		31
Pennsylvania,[11]	Jan. 1, '85,	19,964	6,495	1,697,202	1,463,814	40
Rhode Island,	Oct. 23, '86,	1,341	391	243,658	84,872	12
South Carolina,	Nov. 1, '85,	6,521	622	87,649	62,324	55
Tennessee,	Jan. 1, '86,	17,000	954	256,456*		40
Texas,	Nov. 1, '85,	4,237	1,538	347,846	214,256	37½
Vermont,	Aug. 1, '86,	No debt.	371	107,264	49,927	10
Virginia,	Oct. 1, '86,	31,415	1,366	262,956	84,884	40
West Virginia,[12]	Oct. 1, '86,	–	766	116,746	57,257	35
Wisconsin,	Oct. 1, '86,	2,252	889	381,584	114,584	18 1-10
Aggregate,		$230,247	–	$21,387,437		–

* Real and personal.

[1] California holds in trust for her school and university funds $2,690,000 of her bonded debt, on which interest only is payable, reducing the net debt to $354,500.

[2] Delaware has no State tax on property, and therefore no State valuation of taxable property. The State holds interest-paying securities of over one million, and is actually out of debt.

[3] All of Iowa's debt is invested in the school fund, the interest only being payable.

[4] Kansas holds $607,925 of its bonds in permanent school fund, besides $21,000 sinking fund.

[5] Kentucky had $530,650 in sinking fund, and is practically out of debt.

Approximate Credit of States.

State.	Bonds in Thousands.	Average Rate of Interest Paid.	Credit as represented by Rate of Income realized by Holder at current Prices.
Alabama,	9,193	4.33	4.13
Arkansas,[1]	5,104	–	–
California,[2]	3,948	6.07	–
Connecticut,*	4,271	3.66	3.20
Delaware,*	901	4.00	–
District of Columbia,[3]	14,981	3.73	2.88
Florida,*	1,067	–	–
Georgia,[4]	5,543	5.8	4.00
Indiana,*	5,584	6.5	–
Kansas,*	906	7.00	–
Kentucky,*	674	4.00	–
Louisiana,[5]	11,664	4.00	5.40
Maine,*	5,157	6.00	–
Maryland,*	10,623	4.67	–
Massachusetts,†	31,432	5.00	3.00
Michigan,	231	7.00	3.80
Minnesota,*	4,026	4.50	–
Missouri,[6]	10,201	5.71	3.18
Nebraska,*	449	8.00	–
New Hampshire,	2,926	5.70	3.00
New Jersey,*	1,396	6.00	–
New York,[7]	8,302	5.66	2.52
North Carolina,[8]	6,604	4.88	4.26
Ohio,[9]	1,318	3.73	–
Pennsylvania,*	17,035	4.70	–
Rhode Island,	1,367	6.00	2.69
South Carolina,[10]	5,277	6.00	4.28
Tennessee,[11]	10,353	3.00	4.50
Texas,*	4,018	6.02	–
Virginia,	31,415	5.03	7.57

* No quotations. † Massachusetts has a sinking fund of $23,000,000.

[1] In default. [2] None in market.

[3] The 3.65s of 1924 and funding 5s of 1899 only quoted. Total debt, $18,164,550.

[4] The 7s of 1890 and 4½s of 1915 only quoted. Total debt, $8,695,500.

[5] The stamped 4s of 1914 only quoted. Total debt, $15,100,000.

[6] The 6s, due on average in 1890, only quoted. Total debt, $11,551,000.

[7] The 6s, due on average in 1890, only quoted. Total debt, $9,202,000.

[8] The new 6s, due 1919, and new 4s, due 1909, only quoted. Total debt, $12,627,015.

[9] Basis is on outstanding bonds *not* to be redeemed this year.

[10] The "Brown Consols," due 1893, only quoted. Total debt, $6,522,111; balance to be funded into brown consols.

[11] Settlement 3s of 1913 only. Total debt, $12,500,000.

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[6] The State of Maryland held $4,518,799 in interest-paying securities of corporations, besides $27,723,237 in unproductive securities.

[7] Massachusetts held $20,287,493 in sinking fund.

[8] Of Minnesota's debt, $2,849,000 is held as permanent investment by school funds.

[9] Mississippi's debt was due the school fund to the amount of $2,404,566, on which interest only is payable, leaving net debt, less cash in treasury, $331,725.

[10] New York held in sinking fund, October 1, 1886, $5,051,073.

[11] Pennsylvania held $2,077,074 in sinking fund; also in stocks of incorporated companies, interest-paying, $7,300,000; net debt, $10,341,709.

[12] Debt forbidden by Constitution.

Net Debts, Population, and Debt per Capita of Forty Leading Cities of the United States, Jan. 1, 1887, according to Latest Statements.

Cities.	Population. [000 omitted.]	Net Debt. [000 omitted.]	Net Debt per Capita.
Albany,	100	$3,024	$30
Allegheny,	100	1,321	13
Atlanta,	60	2,223	37
Baltimore,	460	36,733	79
Boston,	400	25,600	64
Brooklyn,	710	33,624	47
Buffalo,	225	8,050	35
Charleston,	60	4,000	67
Chicago,	703	12,592	18
Cincinnati,	300	24,468	82
Cleveland,	200	6,500	32
Columbus,	74	1,920	26
Detroit,	175	1,907	11
Indianapolis,	105	1,405	13
Jersey City,	155	16,000	103
Kansas City,	125	851	7
Lowell,	70	2,451	35
Louisville,	140	9,356	67
Milwaukee,	170	2,966	17
Minneapolis,	160	2,231	14
Nashville,	65	2,100	32
Newark,	160	11,750	73
New Haven,	76	844	11
New Orleans,	240	18,491	77
New York City,	1,400	84,835	61
Paterson,	70	1,100	16
Philadelphia,	1,000	62,068	62
Pittsburg,	200	11,800	59
Providence,	120	7,834	66
Richmond,	90	5,073	56
Rochester,	100	5,515	55
San Francisco,	300	1,457	5
St. Joseph,	60	2,000	33
St. Louis,	450	22,000	49
St. Paul,	140	4,030	29
Syracuse,	67	1,165	17
Toledo,	80	3,228	40
Troy,	60	752	13
Washington,*	210	21,162	11
Worcester,	70	2,188	31

* Population and debt of the District of Columbia.

Average Rates of Interest Paid and Credits of Leading Cities of the United States.

Cities.	Average Rate Paid.	Credit. Rate Realized by Investor.
Atlanta, Ga.,	6.70	4.88
Augusta, Ga.,	6.60	5.00
Baltimore,	5.70	3.25
Boston,	4.61	3.50
Brooklyn,	5.46	3.00
Chicago,	5.90	3.65
Cincinnati,	6.53	4.13
Cleveland,	5.60	3.75
Columbus, Ga.,	5.14	5.00
Detroit,	5.70	3.50
Indianapolis,	6.84	4.00
Louisville,	6.03	4.25
Lynchburg, Va.,	6.39	4.90
Minneapolis,	5.38	4.25
Mobile,	4.50	6.88
New York,	5.68	2.75
Norfolk, Va.,	6.25	5.00
Omaha,	-	4.50
Petersburg, Va.,	7.35	5.25
Richmond, Va.,	6.05	4.38
Savannah,	5.00	5.00
St. Louis,	5.60	3.50
St. Paul,	5.41	4.25
Wilmington, N. C.,	6.73	5.50

The cities of Massachusetts, outside of Boston, have credits ranging from 3.50 to 3.75 per cent.

Growth of American Cities of Fifty Thousand Population, 1790 to 1887.

[000 omitted, 1840 to 1887.]

Cities.	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1887*
Albany,	3,498	5,349	9,356	12,630	24,238	33	50	62	69	90	100
Allegheny,	–	–	–	–	–	–	21	28	53	78	100
Baltimore,	13,503	26,614	46,555	62,738	80,625	134	169	212	267	332	460
Boston,	18,038	24,027	32,250	43,298	61,392	93	136	177	250	369	412
Brooklyn,	1,603	3,298	4,402	7,175	12,042	36	96	266	396	566	710
Buffalo,	–	–	1,508	2,095	8,653	18	42	81	117	155	225
Cambridge,	2,115	2,453	2,323	3,295	6,078	8	15	26	39	52	–
Chicago,	–	–	–	–	–	4	29	109	298	503	703
Cincinnati,	–	750	2,540	9,644	24,831	46	115	161	216	255	300
Cleveland,	–	–	547	606	1,076	6	17	43	92	160	200
Columbus,	–	–	–	1,450	2,437	6	17	18	31	51	75
Detroit,	–	–	770	1,422	2,222	9	21	45	79	116	175
Indianapolis,	–	–	–	–	1,924	2	8	18	48	75	105
Jersey City,	–	–	–	–	–	3	6	29	82	120	155
Kansas City,	–	–	–	–	–	–	–	4	32	55	125
Louisville,	200	359	1,357	4,012	10,352	21	43	68	100	123	140
Lowell,	–	–	–	–	6,474	20	33	36	40	59	70
Milwaukee,	–	–	–	–	–	1	20	45	71	115	170
Newark,	–	–	–	6,507	10,953	17	38	71	105	136	160
New Haven,	–	4,049	5,772	7,147	10,180	14	20	39	50	62	76
New Orleans,	5,500	8,500	17,242	27,176	46,310	102	116	168	191	216	240
New York,	33,131	60,489	96,373	123,706	203,007	312	515	805	942	1,206	1,400
Paterson,	–	–	–	–	–	7	11	19	33	51	70
Philadelphia,	42,520	70,287	96,664	108,116	167,188	258	340	562	674	847	1,000
Pittsburg,	–	1,565	4,708	7,248	12,542	21	46	49	86	156	200
Providence,	6,380	7,614	10,071	11,767	16,832	23	41	50	68	104	120
Richmond,	3,761	5,537	9,735	12,046	16,060	20	27	37	51	64	90
Rochester,	–	–	–	1,502	9,269	20	36	48	62	89	100
St. Louis,	–	–	1,600	4,598	5,852	16	77	160	310	350	450
San Francisco,	–	–	–	–	–	–	34	56	149	233	300
Syracuse,	–	–	–	1,814	6,929	11	22	28	43	51	67
Toledo,	–	–	–	–	–	1	3	13	31	50	80
Troy,	–	–	4,926	5,264	11,605	19	28	39	40	56	60
Washington,	–	3,210	8,208	13,247	18,827	23	40	61	109	147	210
Worcester,	–	2,095	2,577	2,962	4,172	7	17	24	41	58	70

In 1830, only six and one-half per cent. of the population lived in towns of eight thousand inhabitants and upwards; in 1880 the proportion had risen to twenty-two per cent.

* Estimated.

Foreign Municipal Indebtedness.

Mulhall gives the following figures illustrating the public indebtedness of fourteen European cities, in millions of pounds: —

Cities.	Debt (Millions £).	Per Inhabitant.	Valuation (Millions £).	Debt to Valuation.
London,	20.6	£5 7 0	689	3.0
Paris,	85.3	34 5 0	320	26.7
Berlin,	5.6	5 3 0	164	3.5
Liverpool,	21.6	39 12 0	66	32.5
Manchester,	6.2	10 18 0	62	10.0
Birmingham,	6.1	15 0 0	28	21.8
Leeds,	3.5	11 7 0	22	15.8
Rome,	2.3	7 16 0	14	16.0
Buda-Pesth,	1.3	4 5 0	44	2.9
Bradford,	3.4	19 0 0	18	18.9
Breslau,	1.3	5 6 0	–	–
Bristol,	0.6	2 18 0	16	3.8
Munich,	1.5	6 0 0	15	10.0
Newcastle,	0.7	4 17 0	14	5.0

The cities of Great Britain in 1885 owed a total debt of £153,000,000 ($765,000,000), while the American cities, though possessing a greater aggregate population and wealth, owed but $75,000,000 (£15,000,000). The total State and municipal debts of the United States only aggregate $865,000,000 (£173,000,000).

CHAPTER IV.

WATER-WORKS BONDS.

Their Security as Investments. — The History of Water Supply for Cities. — Conduit Data. — Comparisons of Large Gravitation Works. — London's Water Supply. — History of American Water-Works. — Cost, Expenses, and Revenue — Financial Statistics of Leading Water-Works.

As water-works bonds are rapidly growing in favor with conservative investors, the Maverick National Bank has made a specialty of these securities, and would be pleased at any time to hear from parties wishing to learn of desirable investments, or from cities or towns contemplating water-works enterprises. This bank has placed many loans of water companies, and has yet to learn of a dissatisfied investor.

Mortgage bonds of this class net the investor from four to eight per cent., with probably less of risk or doubt than any other securities. In the first place, water-company bonds are a mortgage upon productive property, of which the productiveness is constantly increasing. The first distribution of water is to the heart of the city, but extensions are made until a large territory is supplied. Thus in a few years the first outlay has often been doubled, and the bondholders' security correspondingly increased, as the mortgage always covers all property owned and all that may be acquired. A sinking fund reduces the bonded debt, which steadily diminishes as the value of the security increases.

Again, the property of a water company is not subject

to fire risk, but the fire risk upon other property gives it additional value. Usually the company has a supply contract for the fire department, the proceeds of which, known as "hydrant rental," often guarantee the major part of the bond interest.

The system of advance payments effectually shuts out bad debts, which have crippled so many corporations engaged in manufacturing or mercantile pursuits. Collections are made without cost to the company, by requiring all customers to pay promptly at the office.

Fluctuations and depressions in prices or profits are unknown to water companies. They furnish a universal necessity at fixed rates lower than customers can obtain it by any other method. General business may flag, but neither rich nor poor can ever economize on water; there is no substitute for it. Many of the water companies of the United States have freed themselves entirely from debt.

Competition is not a factor in the calculations of companies organized to construct water-works. No city has two water companies attempting to cover the same territory, though a few cities have had different sections supplied by different companies. The legislative charter granted to water companies usually secures to them the exclusive privilege of supplying water, for a period of from twenty-five to fifty years, in order to encourage an outlay of capital in a manner so beneficial to any town or city. Furthermore, the community would not submit to have the streets torn up continually for the purpose of keeping two systems of pipe in repair.

Should a municipality seek to compromise its funded debt, it cannot avoid paying its water obligations, as the company has a legal right to shut off the supply. If this extreme measure were resorted to, rates of insurance would be raised correspondingly to meet the increased

risk; and in this case public opinion would compel the public officers to settle speedily with the water company.

In the whole history of water-works there have been but three instances of foreclosure of first-mortgage bonds, and in these cases no loss was sustained by the holders. City governments have often defaulted, repudiated, or compromised without affecting the value of the bonds of the water companies supplying those cities. The city of Elizabeth, N. J., has been in default for a number of years, but the water company has paid seven per cent. interest on $400,000 of bonds since 1854. The works originally cost $1,000,000, yet the former amount is their only funded indebtedness. It is evident that no other class of securities can show such a record of immunity from risk.

In conclusion, it only remains to be said that the security of a water-company bond is at its minimum when issued, and is augmented yearly by the inevitable growth of the plant and the consequent increase in net earnings. Hence, if the security is sufficient to justify a purchase at the time of issue, that security will surely be added to every year during the life of the bond. For example, Denver (Col.) Water Company bonds, issued at par and interest, are now $1.30 and interest, with none for sale; Austin (Tex.) Water Company, sold at par and interest in 1877, have reached a premium of $1.35 for firsts and $1.16½ for seconds; New Albany (Ind.) water bonds, floated at par, sell at $1.20; and those of the Fair Haven (New Haven, Conn.) Water Company, sold at par, are worth $1.20. Without exception, so far as is known, the old issues of bonds of water companies in all parts of the United States are held at large premiums. They have been purchased to the extent of over $1,000,000 by a leading insurance company of Philadelphia. A Massachusetts company also holds about $600,000; and they

are being bought in large amounts by national, state, and savings banks, institutions, and investors throughout the Union.

The difference between bonds of water companies and municipal water loans will readily be seen. The works are managed more effectively and profitably; the citizen is relieved of taxation; and the bondholder has a direct lien upon the entire property, whereas if it were conducted by the city he would have little preference over other creditors. His security is ever increasing, special, full, and absolute.

Early History of Water Supply.

During the first century of our era the water supply of ancient Rome was so abundant "that whole rivers of water flowed through the streets." It has been estimated at 375,000,000 gallons per day, or 375 gallons for each inhabitant, and was conducted through nine costly conduits of masonry, in whose construction wonderful engineering skill was shown. Their aggregate length was 249 miles. The principal aqueducts were the Aqua Martia, erected 431 B. C., 38 miles in length, and partly composed of 7,000 arches; the Aqua Claudia, a subterranean channel for 36¼ miles, for 10¾ miles a surface conduit, 3 miles a vaulted tunnel, and 7 miles on lofty arcades, with a capacity of 96,000,000 gallons daily; and the Nova Anio, which was 43 miles in length. Some of these aqueducts rose in three distinct arches, which conveyed water from sources of different elevations. In Constantinople, the capital of the Eastern Empire, the Romans left numerous subterraneous reservoirs covered with stone arcades resting on pillars. In France, also, the famous Pont du Gard aqueduct, which supplied the town of Nismes, is still an object of interest. It consists of 3 tiers of arches, the lowest of 6, supporting 11 of

equal span in the central tier, surmounted by 35 of smaller size. Its height is 180 feet, with a channel 5 feet high by 10 wide; the capacity was estimated at 14,000,000 gallons per day.

India is noted for numerous ancient impounding reservoirs of vast dimensions. The Poniary reservoir has an area of 50,000 acres and banks 50 miles in extent. In Mexico and Peru the aborigines left water channels of wonderful length. The great aqueduct of Peru, built by the Incas, was 360 miles long.

The works of the Romans left nothing to be improved upon in the method of transporting water from a distance until recent times; but in the early part of this century it was found that by sinking artesian wells a supply could be obtained more economically.

Artesian Wells.

The famous well at Grenelle, France, was begun by the government in 1834, and after repeated failures water was reached at the depth of 1,798 feet in 1843. Its bore is 3½ inches; capacity, 600 gallons per minute; height of flow, 128 feet; temperature, 82 degrees. It cost 300,000 francs. The Passy well near Paris is in the same stratum, 1,923 feet deep, with a capacity of 5,582,000 gallons per day. Paris has two other wells, both started in 1866, the La Chapelle and the Butte aux Caelles. The Kent Water-Works of London is supplied by wells in the chalk formation, yielding 9,000,000 gallons daily. Liverpool has four wells, with a combined daily capacity of 6,000,000 gallons; and Birmingham has four wells, supplying 8,000,000 gallons per day. The Desert of Sahara has a number of bored wells, some yielding as high as 1,500,000 gallons per day.

In this country, St. Louis has a well 3,147 feet deep. Louisville has a three-inch well 2,086 feet deep, with a

capactiy of 600 gallons per minute. Charleston has two, — one, 1,250 feet deep, discharging 25,000 gallons daily; and another, 1,970 feet deep, of which data are not given. The State of Ohio has repeatedly failed in the attempt to supply Columbus in this way. Dubuque is supplied by a spring accidentally struck in tunnelling a neighboring drift. Cincinnati has nine wells, sunk by private enterprise. The deepest well in the world is near Berlin, 4,194 feet deep, without reaching the salt formation. The Chinese practised well-boring two thousand years ago, the method being the percussive action of a tool suspended by a flexible rope.

Modern Water Supply.

Aqueducts are now universally superseded by the plan of subterranean pipes as adopted by Hawksley at Liverpool and Bateman at Glasgow. The last one built on the Roman plan is the Marseilles conduit, whose engineer imitated the Pont du Gard, at a cost of three times that of a system of inverted syphon pipes. The Glasgow system has 13 miles in tunnels, $3\frac{3}{4}$ miles iron piping across valleys and 9 miles of open cutting and bridges. The Aberdeen works has a 36-inch syphon, 1,200 feet long, across Cullen Burn, supported by granite piers. One of the syphons for supplying Madrid crosses a valley 4,560 feet in length, and consists of four lines of cast-iron pipes 3 feet in diameter. Dublin is supplied through 30,336 yards of 33-inch and 8,272 yards of two lines of 27-inch cast-iron pipes, with three relief tanks and an average fall of 20 feet per mile; capacity, 20,000,000 gallons per day.

The following tables, compiled from the best authorities, give details in regard to the construction and principal physical features of the most important conduits and gravitation works of Europe and the United States: —

Conduit Data.

Localities.	Width in Feet.	Height in Feet.	Depth of Water in Feet.	Daily delivery at given Depth, U. S. Gallons.	Total Daily Capacity, U. S. Gallons.
Cochituate, Boston,	5.	6.333	6.333	16,398,000	16,500,000
Croton, N. Y.,	7.47	8.458	6.083	59,340,000	100,000,000
Washington,	9.	9.	3.465	27,560,000	100,000,000
Brooklyn,	10.	8.667	5.	–	70,000,000
Sudbury, Boston,	9.	7.667	5.3	–	70,000,000
Baltimore,	9.	9.	–	–	170,000,000
Loch Katrine, Glasgow,	8.	8.	6.85	60,000,000	60,000,000
Canal of Isabel III., Madrid,	7.052	9.184	–	–	52,000,000
Vanne, Paris,	6.6	6.6	5.	–	23,500,000
Dhues,	2.3	3.5	–	–	5,500,000
Pont du Gard, Nismes,	4.	–	3.333	–	14,000,000
Pont Pyla, Lyons,	1.833	–	1.833	–	–
Metz,	3.167	–	2.167	–	–

Comparison of Large Gravitation Works.

Localities.	Distance of Source in Miles.	No. Acres of Watershed.	Capacity of Storage in Gallons.	Height of Source above City Level, in Feet.	Capacity of Aqueduct, in Gallons.	Population.
					Millions.	
New York,	40	216,844	9 billions.	160	92	1,400,000
Boston,	16	100,000	–	134	86	412,000
Baltimore,	7	–	765 millions.	165	170	332,190
Liverpool,	–	10,000	4 billions.	–	17	600,000
Manchester,	18	19,390	6 "	790	39	750,000
Glasgow,	25¾	47,800	12 "	–	50	550,000
Dublin,	21.6	14,080	2½ "	692	20	330,000

London is supplied by eight water companies, which, however, are not in competition, each covering its allotted section of the city. The total statistics were, in July, 1875: Population, 3,713,108; miles of pipe, 3,074; daily average consumption from Thames, 64,791,000 gallons; other sources, 57,528,000 gallons; total daily, 122,319,000 gallons. The total capital invested is about $51,900,000.

History of American Water-Works.

It is believed that the first public water-works in the United States were built at Bethlehem, Pa., in 1754. Between that date and 1801 only ten towns erected water-works. Among these were New York and Providence. New York was supplied in 1799, and Philadelphia in 1801; the water in both cases being pumped by steam, and distributed through bored wooden logs.

At present, according to the *Engineering News'* statistical tables, there are known to be 1,402 water-works in operation, or nearly complete, and a large number of projected works are reported as likely to be soon built.

The increase of works for water supply has not been regular, as will be seen from the following statement of works erected in each decade since the beginning of the present century: —

1801-1810,	13
1811-1820,	5
1821-1830,	14
1831-1840,	13
1841-1850,	26
1851-1860,	52
1861-1870,	79
1871-1880,	354
1881-1886,	623

In addition to these there are 212 works the date of construction of which has not been ascertained.

Of the 1,402 towns supplied, seven have duplicate works. The supply in 544 towns is controlled by the public authorities and 675 by private corporations, the ownership of 183 works being unknown in consequence of the managers' neglect to reply to inquiries.

As regards the mode of supply, the water is furnished to 421 towns by gravity, to 553 by pumping into reservoirs, tanks, or stand-pipes, and to 260 by pumping directly into the mains without the intervention of any

apparatus for equalizing the flow or the pressure. From 168 towns no data could be obtained.

New York was supplied with Croton water in 1842 by a brick aqueduct, 38 miles long, crossing Harlem River by High Bridge. The watershed of the Croton has an area of 338.82 square miles. The storage capacity is 9,000,000,000 gallons, and the capacity of the aqueduct 92,000,000 gallons daily. There are three distributing reservoirs with an aggregate capacity of 1,374,000,000 gallons, and one of 10,750,000 gallons for high service. Average daily consumption, 95,000,000 gallons; number of taps, 77,000. All buildings are assessed by frontage tax beside usual water rates, which are 7½ cents per 1,000 gallons.

Philadelphia is supplied by water and steam power pumping. The available capacity is about 100,000,000 gallons daily. Capacity of the pumps, 72,000,000 gallons. There are 16 reservoirs, aggregating 200,000,000 gallons storage capacity. Miles of pipe, 746. Daily average consumption, 58,000,000 gallons; largest, 80,500,000 gallons. Total receipts, 1880, nearly $1,500,000; expenditures, about $400,000. Laying of water pipes is assessed on abutting property. Total profits, 1855 to 1880, over $12,000,000.

The Brooklyn system is pumping, with reservoir distribution, water being gathered from a drainage area of 60½ square miles on the southern slope of Long Island by intercepting ponds and conducted through masonry conduit to the pump well, 7 miles from East River. The storage reservoir has a capacity of 1,000,000,000 gallons. The daily water supply is about 44,000,000 gallons; miles of pipe, 351; average daily consumption, 30,750,000 gallons; taps, 60,000; meters, 859.

Chicago is supplied from Lake Michigan by a system of

cribs, and constant pumping through stand-pipes. There are 450 miles of pipe. The average daily consumption is about 58,000,000 gallons. The city has now outgrown the old system, and vigorous measures are being taken to increase the water supply.

Boston has three sources of supply, — a brick conduit from Lake Cochituate, 14.6 miles in length; a second of masonry, 16 miles long, from the Sudbury River; and the Mystic River system, which is separate. The first two have reservoirs with a total capacity of 692,000,000 gallons, and can give a daily supply of 76,000,000 gallons. The miles of pipe are 500; the average daily consumption, 36,000,000 gallons; and the number of water takers, 68,334.

The New England States have 275 water-works, or one to every 240 square miles; the Middle States about 400, or one to every 288 square miles; in the South, the proportion is relatively much less, owing to sparse population. Massachusetts alone has 128 systems; and Rhode Island, with but little over 1,000 square miles of territory and 300,000 population, has 15. In the United States there are about 1,500 water-work systems, and over 100 new ones are projected, many in the South and West. Within fifteen years over 1,000 have been built, and since 1880 the increase has been 623. The total capital invested is estimated at $300,000,000.

Cost, Expense, and Revenue of Water-Works.

The cost of constructing water-works varies greatly, according to local features, etc. In Great Britain gravitation projects cost from $10 to $13, and pumping schemes from $7 to $10 per inhabitant.

The following table shows the average cost per head for eight British cities: —

London,	$20	Liverpool,	$20
Bradford,	35	Glasgow,	30
Halifax (Eng.),	25	Manchester,	12
Dundee,	30	Sheffield,	12

The average cost per head for a supply of 20 imperial gallons per day for 66 towns by gravitation was $8; for 48 towns, with pumping system, $5.80; 11 towns, both systems, $7.

This table shows the comparative cost per head of construction of works in seventeen American cities: —

Town.	System.	Cost per Capita.	Town.	System.	Cost per Capita.
Detroit,		$23 11	Cleveland,		$16 84
Newark,		19 08	Providence,		52 74
Wilmington, Del.,		20 73	Boston,	Gravity,	44 46
Buffalo,		18 19	Hartford,	Gravity,	35 60
Cincinnati,		26 20	New York,	Gravity,	34 38
Milwaukee,		19 25	St. Louis,		26 07
Columbus,		18 14	Chicago,	Pumping,	17 49
Louisville,		25 14			

The following table shows the receipts per mile of pipe per annum of the leading water companies of the United States, cost of maintenance, and comparative rates: —

City.	Receipts per Mile.	Revenue in Cents per 1,000 Gals.	Cost in Cts.; Maintenance per 1,000 Gals.	Rates per 1,000 Gals., in cents.
Chicago,	$2,022	4.12	1.18	10
New York,	3,200	4.7	1.00	7½
Philadelphia,	1,932	5.77	1.28	15
Boston,	2,730	–	–	10 to 40
Brooklyn,	3,307	–	–	15
Louisville,	1,600	–	–	–
Baltimore,	2,183	–	–	13½
St. Louis,	3,112	6.91	2.55	–
Cincinnati,	2,647	7.01	2.6	10.2
Cleveland,	1,611	5.43	1.5	6 to 12
Detroit,	1,821	4.09	.82	–
Buffalo,	2,060	3.50	1.00	20 to 30
Milwaukee,	1,500	–	–	–
Indianapolis,	1,746	–	–	–
Columbus,	1,128	–	–	7 to 20
Pittsburg,	3,556	–	–	–
Washington,	397	–	–	–
Toledo,	618	–	–	–

The average dividend paid by the water companies of Great Britain for 1880 was 7 per cent.

Financial Statistics.

The following table, condensed from statistics of the *Engineering News*, gives financial details of the principal water-works in the United States and Canada: —

UNITED STATES.

Town and State.	Population.	When Built.	Cost of Construction.	Debt.	Rate of Interest.
New York, N. Y.,	1,500,000	1842	$40,000,000	–	–
Philadelphia, Pa.,	850,000	1801	–	–	–
Brooklyn, N. Y.,	600,000	1859	12,858,000	–	–
Chicago, Ill.,	525,000	1840	10,416,444	$3,955,000	4, 6 and 7 %
Boston, Mass.,	412,000	1848, '64, '78	19,829,911	14,056,474	3½, 4½ and 6 %
St. Louis, Mo.,	360,000	1867, '73, '83	13,000,000	5,200,000	6 %
Baltimore, Md.,	350,000	1804, 1880	10,738,018	9,500,000	4, 5 and 6 %
San Francisco, Cal.,	250,000	1859	17,000,000	5,000,000	5 %
New Orleans, La.,	217,000	1833	2,397,000	395,000	6 %
Washington and Georgetown, D. C.,	160,000	1853	8,000,000	875,000	3 %
Buffalo, N. Y.,	160,000	1852	4,157,609	2,828,382	3, 5 and 7 %
Cleveland, Ohio,	161,000	1853	4,569,374	1,775,000	3½ to 7 %

Financial Statistics — *Concluded.*

Town and State.	Population.	When Built.	Cost of Construction.	Debt.	Rate of Interest.
Pittsburg, Pa.,	160,000	1824, 1876	–	$4,500,000	6 and 7 %
Newark, N. J.,	137,000	1800	–	3,485,000	–
Jersey City, N. J.,	125,000	1852	$4,950,000	4,838,000	–
Louisville, Ky.,	125,000	1860	4,759,790	900,000	6 %
Detroit, Mich.,	120,000	1827, 1875	3,619,489	1,451,000	4, 6 and 7 %
Milwaukee, Wis.,	120,000	1873	2,589,341	1,505,000	4 to 7 %
Providence, R. I.,	105,000	1772, 1870	6,234,672	5,500,000	5 and 6 %
Albany, N. Y.,	91,000	1813, 1850	–	1,089,000	4, 6 and 7 %
Rochester, N. Y.,	90,000	1876	3,741,123	3,182,000	7 %
Indianapolis, Ind.,	80,000	1870	–	550,000	6 %
New Haven, Conn.,	65,000	1862	1,500,000	125,000	7 %
Lowell, Mass.,	60,000	1872	2,388,218	1,890,000	6 %
Troy, N. Y.,	57,000	1833, 1880	1,149,084	443,500	4 %
Cambridge, Mass.,	53,000	1855	2,087,378	1,747,500	–
Syracuse, N. Y.,	52,000	1829	727,000	200,600	6 and 7 %
Columbus, O.,	52,000	1870	1,086,771	772,000	4 and 6 %
Toledo, O.,	51,000	1874	1,250,000	1,000,000	8 %
Minneapolis, Minn.,	50,000	1867	953,119	615,000	4½ %
St. Paul, Minn.,	45,000	1870	1,690,744	1,660,000	4, 5 and 8 %
Hartford, Conn.,	45,000	1854	1,623,485	912,000	–
Wilmington, Del.,	43,000	1804, 1875	625,000	585,000	–
Lawrence, Mass.,	40,000	1873	1,894,654	1,300,000	6 %
Lynn, Mass.,	40,000	1869	1,410,788	1,107,700	4 and 6 %
Denver, Col.,	40,000	1872	600,000	350,000	8 and 10 %
Dayton, O.,	40,000	1870	571,526	562,000	4 %
Atlanta, Ga.,	40,000	1875	450,000	440,000	7 %
St. Joseph, Mo.,	35,000	1880	908,000	400,000	6 %
Springfield, Mass.,	35,000	1843, 1873	1,306,187	1,200,000	6 and 7 %
Memphis, Tenn.,	34,000	1872	500,000	100,000	6 %
Portland, Me.,	34,000	1869	–	1,300,000	5 and 6 %
Grand Rapids, Mich.,	33,000	1875	485,066	382,000	8 %
Savannah, Ga.,	31,000	1854	1,000,000	None.	–
Peoria, Ill.,	30,000	1868	450,000	450,000	6 %
Evansville, Ind.,	30,000	1870	500,000	300,000	7 3-10 %
Covington, Ky.,	30,000	1870	400,000	300,000	7 %
Trenton, N. J.,	30,000	1803, 1852	422,951	265,000	5 and 6 %
Elizabeth, N. J.,	28,500	1854	1,000,000	400,000	7 %
Erie, Pa.,	28,000	1840, 1868	891,548	675,000	7 %
New Bedford, Mass.,	27,000	1865	1,217,592	850,000	7 to 4 %
Fort Wayne, Ind.,	27,000	1880	280,000	260,000	6 %
Terre Haute, Ind.,	27,000	1873	345,000	100,000	8 %
Petersburg, Va.,	22,000	1856	150,000	125,000	8 %
Poughkeepsie, N. Y.,	21,000	1870	581,845	550,000	7 %
Springfield, O.,	21,000	1883	419,596	440,000	5 %
CANADA.					
Toronto, Ont.,	87,000	1841, 1873	2,430,000	2,430,000	4, 5 and 6 %
Quebec,	63,000	1851	2,000,000	1,750,000	6 and 7 %
Montreal,	141,000	1801, 1856	6,131,888	6,000,000	4 and 6 %
Halifax, N. S.,	36,200	1848	741,000	741,000	5 and 6 %
Hamilton, Ont.,	36,000	1859	1,250,000	900,000	6 %
St. Johns and Portland, N. B.,	32,000	1838	999,180	999,180	4, 5 and 6 %
St. Johns, N. F.,	31,000	1847, 1862	412,000	412,000	5 %

CHAPTER V.

WHAT ARE SAVINGS BANK SECURITIES?

Abstract of the Laws regulating the Investment of Savings Bank Funds.—The Growth of Savings Banks.—Savings Bank Statistics of the United States.

While in England no laws were passed affecting the organization of savings banks until 1817, in Boston, one was incorporated Dec. 13, 1816, and began business in the following spring. In 1818 this was followed by the incorporation of savings banks in Salem, Mass., and Baltimore; and one in Philadelphia in 1819. In the latter year they appeared in Hartford, Conn., Newport and Providence, R. I., Bristol, R. I., and Portland, Me.

SAVINGS BANKS STATISTICS.

	Deposits at close of 1860.	Deposits at close of 1870.	Deposits May 31, 1880.	1885-86.		
	[00,000 omitted.]			Number of Depositors.	Amount of Deposits.	Average to each Depositor.
Maine,	$1,5	$16,6	$21,6	109,398	$35,1	$320
New Hampshire,	5,6	21,5	28,2	121,216	47,2	389
Vermont,	1,1	2,3	6,9	49,453	11,7	237
Massachusetts,	45,0	135,7	199,3	848,787	275,0	324
Rhode Island,	9,0	30,7	39,2	116,381	51,8	445
Connecticut,	19,3	55,3	73,5	256,097	92,5	361
New York,	67,4	230,7	318,1	1,208,072	457,0	378
New Jersey,	*4,5	20,0	17,4	91,681	25,3	276
Pennsylvania,	*8,0	*15,0	30,4	143,645	37,5	261
Maryland,	*6,0	*12,0	21,7	*77,212	30,5	395
Washington,	–	–	3	7,605	8	104
Delaware,	–	–	1,2	–	–	–
Southern States,	–	–	1,4	–	–	–
Ohio,	–	–	9,6	*34,553	12,8	371
Indiana,	–	–	–	–	2,2	–
Minnesota,	–	–	–	14,361	3,6	254
California,	*1,0	36,5	44,2	*80,489	60,4	751
Total,	$168,8	$576,4	$813,3	3,158,950	$1,143,7	$361

* Estimated.

Savings Bank Securities.

The following is a condensed statement of the laws of the New England States and of New York, defining the classes of securities in which savings banks may invest.

The limitations as to the amount of funds or proportion of deposits which may be invested in any one class of securities are not in all cases given. For these, reference should be had to the savings bank laws of each State, compilations of which usually accompany the annual reports of the savings bank commissions.

New Hampshire has no restrictive laws regarding savings bank investments.

Massachusetts Savings Banks

May invest as follows : —

1. Not more than seventy per cent. of deposits in first mortgages upon Massachusetts real estate not exceeding sixty per cent. of valuation.

2. In public funds of United States, any New England State or New York, or bonds or notes of any city, county, town, or incorporated district of Massachusetts or any city of New England whose net indebtedness does not exceed five per cent. of valuation for taxation purposes ; or of any county or town thereof whose net debt does not exceed three per cent. of such valuation ; or in notes of Massachusetts citizens with pledge of any of these securities at no more than par value. In bonds of Pennsylvania, Ohio, Michigan, Indiana, Illinois, Wisconsin, Iowa, and District of Columbia, or any city in these States or in the State of New York (issued for municipal purposes) having more than 30,000 inhabitants and debt not exceeding five per cent. of valuation, and in notes of Massachusetts citizens with these as collateral pledged at not exceeding eighty per cent. of market value.

3. In the first mortgage bonds of any New England rail-

road company (not street railway) operating its own road and that has paid regular dividends for the two preceding years; in first mortgage railroad bonds guaranteed by such company; in notes of Massachusetts railroad companies, with road located wholly or in part in Massachusetts, unencumbered by mortgage and which has paid dividends of not less than five per cent. per annum for preceding two years, or in notes of Massachusetts citizens with above as collateral at not above eighty per cent. of par.

4. In stocks of Massachusetts banks or any United States bank located in New England, or in loans on bank stocks to citizens at not above eighty per cent. of market value and not exceeding par; not more than thirty-five per cent. of deposits to be thus invested or more than three per cent. in stock of one bank.

5. May loan fifty per cent upon depositors' books as security.

6. One-third part of deposits may be invested in personal securities, not exceeding one year to run, with at least two sureties, and all residents of Massachusetts.

7. Ten per cent. of deposits, but not more than $200,000 in lot and building for its own business.

8. In real estate acquired by foreclosure, but it must be sold within five years after title is acquired.

Maine.

The savings banks of this State may invest —

In public funds of any New England State, or county, city, or town therein; in United States funds; in any United States bank or Maine State bank.

In bonds of cities (not less than 10,000 inhabitants) in New York, Pennsylvania, Maryland, Ohio, Indiana, Illinois, Kentucky, Michigan, Wisconsin, Minnesota,

Iowa, Missouri, Kansas, and Nebraska, and in public funds of any of these States, and in bonds of counties of these States having 20,000 population, when not issued in aid of railroads; but where the city or county debt exceeds five per cent. of valuation (except the city of St. Louis) investment is forbidden.

In first mortgage bonds of any completed railroad of the above-named States or of New Jersey, and in the first mortgage bonds of the Central Pacific, Union Pacific, and Northern Pacific, and in first mortgage bonds of Maine railroads; in stock of any dividend paying railroad in New England; in stock of any unmortgaged Maine road; in first mortgage bonds of Maine water companies supplying for domestic use and fire extinguishment purposes cities or towns of not less than 2,500 inhabitants.

In the stock and bonds of any other Maine corporations issuing and regularly paying five per cent. per annum.

In first mortgages of real estate in Maine or New Hampshire not exceeding sixty per cent. of value.

In notes with a pledge as collateral of any of the aforesaid securities, including Maine savings bank books and the stock of any railroad company at not above seventy-five per cent. of its market value.

In loans to corporations having real estate and doing business in Maine.

In pledge or mortgage of such other personal property as, in the judgment of the trustees, it is safe and for the interest of the bank to accept.

Not exceeding five per cent. of deposits, or $100,000 in amount, may be invested in a bank site and building.

Banks cannot be interested in more than one-fifth of the capital stock of any corporation, nor invest more than ten per cent. of deposit nor exceeding $60,000

therein; nor can they have more than fifty per cent. of deposits in real estate mortgages save in settlement to secure debts.

Vermont Savings Banks

May invest in —

First mortgages of unencumbered real estate; loan not to exceed three-fifths the cash value of property. Not less than one-sixth of amount of such mortgages shall be upon real estate in Vermont, and not more than seventy per cent. of assets in real estate mortgages.

Loans on unimproved or unproductive real estate not to exceed forty per cent. of value thereof.

Not exceeding one-third of assets in personal security loans not exceeding a year's time, with two names of residents within the State or within fifty miles of the bank.

Three per cent. of deposits in its own building.

Public funds of United States or of New England States, or cities, towns, villages, or school districts of New England States.

Bank or trust company stocks incorporated under United States laws or of laws of New York or New England States.

Bonds of cities (except railroad aid bonds) of 5,000 inhabitants whose debt is not legally allowed to exceed and does not exceed five per cent. of valuation in New York, New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Nebraska, Kansas, Missouri, and California; in public funds of these States, county bonds of the same (not in aid of railroads) where county debt does not exceed and is not legally allowed to exceed five per cent. of assessed valuation. In school bonds and school district bonds of these States (except California) upon same basis of debt. In notes

with any of these securities as collateral, including deposit books or receipts of Vermont banks or trust companies. Not more than ten per cent. of deposits nor more than $35,000 to be invested in one bank or trust company, or more than ten per cent. of same to be held as loan security or investment. No loan to one person or firm to exceed five per cent. of deposits nor more than $30,000, and no loan on personal security to exceed $10,000.

Rhode Island.

"Institutions for savings in this State must invest their receipts in public stocks or bonds of any State or of the United States, or in any bank stock or in notes or bonds of any town or city, or in such corporate stocks or bonds as they may deem safe and secure; or they may discount notes, bonds, or drafts of individuals or corporations with two other responsible endorsers, sureties, or guarantors, or the notes, bonds, or drafts of individuals or corporations secured by the public notes, stocks, or bonds of any State of the United States, or of any town or city, or by the stock or bonds of any corporation which may be deemed to be safe, or by mortgage on real estate."

Connecticut.

Savings banks may employ not over half their deposits in personal loans, and in public funds of the United States, New England States, or New York, New Jersey, Pennsylvania, Ohio, Kentucky, Michigan, Indiana, Illinois, Wisconsin, Iowa, Missouri, Kansas, Nebraska, District of Columbia; in authorized bonds of any incorporated New England city, of New York City, Brooklyn, Albany, Syracuse, Utica, Troy, Rochester, Buffalo, Philadelphia, Detroit, Cleveland, Columbus, Dayton, Cincinnati, Chicago, Milwaukee, and St. Louis; in the first mortgage bonds of any railroad company in the above-

mentioned States which has paid not less than five per cent. annual dividends regularly on its entire stock for not less than five years next previous to the purchase of the said bonds; or in the consolidated mortgage bonds of any railroad company chartered in Connecticut, said bonds being authorized to retire the entire bonded debt of said company, provided such company has paid dividends as aforesaid; or in the bonds of any town or borough in the State; or in the stock of any bank of Connecticut, New York City, or Boston; or in the stock of any Hartford or New Haven trust company. All other loans shall be secured by mortgage of unincumbered Connecticut real estate, worth double the amount of the loan secured thereon.

New York.

The savings banks of this State are authorized to invest—

1. In the stocks or bonds or interest bearing notes or obligations of the United States or those for which the faith of the United States is pledged to provide for the payment of the interest and principal, including the bonds of the District of Columbia, commonly known as the three-sixty-five bonds.

2. In the stocks, bonds, or notes of New York State bearing interest.

3. In the stocks, bonds, or notes of any State in the Union that has not within ten years previous to making such investment by such corporation defaulted in the payment of any part of either principal or interest of any debt authorized by any legislature of such State to be contracted.

4. In the stocks, bonds, or notes of any city, county, town, or village of this State issued pursuant to the authority of any law of New York State, or in any inter

est bearing obligations issued by the city or county in which such bank shall be located.

5. In bonds and mortgages on unincumbered real estate situated in New York State and worth at least twice the amount loaned thereon, but not to exceed sixty per cent. of the whole amount of deposits shall be so loaned or invested.

6. In real estate.

(1.) A plot whereon is erected or may be erected a building or buildings requisite for the convenient transaction of its business; the cost of such building not to exceed fifty per cent. of the net surplus of such corporation.

(2.) Such as shall have been purchased by the bank at sales upon foreclosure of mortgages owned by such bank, or upon judgments and decrees obtained or rendered for debts due to it, or in settlements effected to secure such debts. All such real estate shall be sold within five years, unless time extended by superintendent.

CHAPTER VI.

BANKS AND BANKING.

Early Banking in Europe. — The Bank of England and the Joint-Stock Banks. — Bank of France. — Prices and Dividends of European Bank Shares. — Canadian Banks. — The Increase of Banking Capital. — History of Banking in the United States. — The Number of National Banks. — Capital and Profits. — Comparative Position in Recent Times. — The Statistical Record for Twenty-one Years. — The Maverick National Bank.

Early Banking.

Modern banking dates from the revival of civilization in Italy. The Bank of Venice (1171) was the first in Europe; it was based on a forced loan to the state, and its original capital is said to have been 2,000,000 ducats ($4,500,000). It was a bank of deposit, but in its early days deposits could not be withdrawn; its credits commanded a premium, with slight exceptions throughout its entire history. The bank was ruined by the French invasion of 1797. The names of Bardi, Acciajuoli, Peruzzi, Pitti, and Medici have been preserved to us in Italian art and literature, but in their time they represented the greatest trading and banking houses in Europe. When in 1345 the houses of Bardi and Peruzzi failed, incalculable distress followed. The people had deposited with them 900,000 florins ($2,025,000), but these houses had loaned Edward III. and the King of Sicily 1,700,000 florins ($4,075,000), which the latter were unable to pay.

The size of financial transactions in these times may be judged from these figures and from the fact that from 1430 to 1433 seventy-six bankers at Florence lent 4,865,000 gold florins ($9.946,250).

The Bank of St. George at Genoa, for centuries one of the leading banks of Europe, was established in 1407; it continued in existence till its pillage by the French in 1800.

Barcelona, in the middle ages, was one of the foremost commercial cities of Europe; it is especially interesting as the place where bills of exchange were first negotiated. The Bank of Barcelona was organized in 1401.

At the beginning of the 17th century, Amsterdam, then the chief port of entry in Europe, suffered greatly from the worn and clipped condition of its coin. To remedy this and to provide a standard for the currency the Bank of Amsterdam was established in 1609; it was for deposit and transfers of accounts. The managers were under oath not to lend any of the funds. About the middle of the last century they secretly lent part of the bullion to the East India Company and to the government of Holland. This, in connection with the French invasion in 1794, resulted in the ruin of the bank.

The Bank of Hamburg (1619), a bank of deposit, based on fine silver bars, was always one of the best managed banks in Europe. It was merged into the Imperial Bank of Germany in 1875.

English Banking.

Banking began in England much later than on the continent. It had been the custom with the merchants of London to deposit their money in the Tower with the Master of the Mint. Shortly before the opening of the Long Parliament Charles I. seized upon £200,000 of this as a forced loan. Compelled to seek a new place of

security for their funds, the merchants, about the year 1640, began to make deposits with the goldsmiths, many of whom gradually gave up their old business to become bankers. This innovation in the affairs of the goldsmiths was vigorously attacked. It is noted that among the assailants was Sir Josiah Child, who afterwards himself became a banker, and founded one of the two houses now existing in London that were established before the Bank of England.

The Bank of England was projected by William Patterson, a Scotchman; it was chartered July 27, 1694, for a period of eleven years. It was founded upon a loan of £1,200,000 to the government of William and Mary, then in need of funds, in consideration of which it was to receive interest at eight per cent. per annum, besides £4,000 per annum for the management of the public debt. The charter has been renewed several times, the last in 1844, when the opportunity was taken to divide the bank into two departments, known as the issue and banking departments. The issue department is allowed to put forth notes to the amount of £15,750,000 on government securities, but for all sums above that amount it is required to have a like amount of bullion. The bank suspended specie payments from 1797 to 1823. From the beginning, the capital of the bank and the loan to the government have been nearly identical in amount.

The capital of the bank has risen as follows: —

1694,	£1,200,000	1782,	£11,600,000
1708,	4,400,000	1816,	14,500,000
1746,	10,800,000	1887,	14,500,000

THE CONDITION OF THE BANK OF ENGLAND AT DIFFERENT PERIODS FROM 1780 TO 1887.

YEAR.	Millions £.			
	Circulation.	Deposits.	Securities.	Bullion.
1780,	8.4	4.7	10.9	3.6
1790,	10.0	6.2	10.3	8.6
1800,	16.8	7.1	21.4	6.1
1810,	21.0	12.5	35.4	3.5
1820,	23.5	4.1	26.2	4.9
1830,	20.1	10.8	24.2	9.2
1840,	16.5	6.6	21.6	4.3
1850,	20.4	18.4	26.0	16.0
1860,	21.5	18.8	29.4	14.0
1870,	24.5	24.2	29.5	22.3
1880,	27.1	33.1	34.8	27.9
Jan. 1, 1887,	24.4	28.5	36.2	18.8

The Bank of Scotland was organized in 1695; the Bank of Ireland began business June 1, 1783.

In 1708, copartnerships of more than six persons for the purpose of banking were forbidden, and the joint-stock banks were closed.

In 1825, a bank act, allowing such organizations, was passed, and at first banking rapidly expanded and failures were numerous; but since 1844 the character of bank management in England has greatly improved. The largest of the joint-stock banks, the London and Westminster, was established in 1834; its present capital is £2,800,000, and it pays a dividend of fifteen per cent. Its deposits are £22,217,424, and its total liabilities foot up £27,948,991.

The number of joint-stock banks in the United Kingdom in June, 1882, was 186, of which 120 were English, 10 Scotch, 9 Irish, and 47 Colonial; their business was as follows: —

	Millions £.				
	English.	Scotch.	Irish.	Colonial.	Total.
Capital,	52	9	7	40	108
Reserve,	22	6	3	15	46
Value of Stock,	138	24	20	68	250
Issue,	28	6	7	10	51
Deposits,	279	79	23	132	513
Cash,	32	14	6	33	135
Government Securities,	52	12	2	12	78
Discounts,	225	62	20	251	558
Assets,	398	105	32	250	785

The above shows a nominal capital and reserve of 154 millions, but the shares represent an actual value of 250 millions.

The present market value of banking capital in the United Kingdom is as follows: England, 173 per cent.; Scotland, 153 per cent.; Ireland, 122 per cent. Total, United Kingdom, 165 per cent.

The following table shows the increase of banking in the United Kingdom from 1850 to 1882: —

	Millions £ Capital and Deposits.		Amount per Inhabitant.	
	1850.	1882.	1850.	1882.
England,	207	660	£11	£26
Scotland,	36	103	12	28
Ireland,	17	43	3	8
United Kingdom,	260	806	£10	£23

The banks of the United Kingdom are owned by 88,000 shareholders, the average capital to each shareholder being £1,000 in Scotland, £780 in England, and £720 in Ireland.

BANK-NOTE ISSUE OF UNITED KINGDOM.

	000 omitted.			Per Inhabitant (Shillings).		
	1844.	1874.	1882.	1844.	1874.	1882.
England, . . .	£23,400	£31,200	£28,900	34	25	22
Scotland, . . .	3,000	5,900	5,600	22	35	30
Ireland, ...	5,900	6,800	7,300	15	26	29
United Kingdom, .	£37,300	£43,900	£41,800	27	27	23

The Bank of France.

The Bank of France, second to the Bank of England in size and importance in Europe, was founded in 1800. The original capital was 45,000,000 francs; increased in 1806 to 90.000,000 francs, divided into 90,000 shares at 1,000 francs each. The bank established branches from time to time, and in 1848 it incorporated with itself the departmental joint-stock banks at Lyons, Marseilles, Bordeaux, Rouen, and other large cities; in 1879 the branches numbered ninety. The capital of the bank has been increased at various times; it is now 182,500,000 francs. The Bank of France is the only bank of issue in the Republic.

The following shows the situation of the Bank of France in May, 1887: —

Assets.	£	Liabilities.	£
Coin and Bullion — Gold, .	47,637,000	Notes, ...	109,341,000
" " Silver,	46,609,000	Government deposits,	9,698,000
Government securities, .	14,375,000	Private deposits, .	13,626,000
Private securities, . .	33,621,000		

German Banks.

Up to the close of the Franco-Prussian war banking was carried on in Germany under laws peculiar to each State. Most of the banks were allowed to issue notes, the circulation in each case being confined to the neighborhood of the issuing bank. Dec. 31, 1873 there were thirty-three banks of issue in the Empire, with a circulation of 1,352,548,000 marks ($338,137,000). The unification of Germany made a general banking law necessary. Jan. 30, 1875, a law was passed establishing the Imperial Bank. With this the old Bank of Hamburg and the Royal Bank of Prussia were incorporated.

The situation of the bank in May, 1887, was as follows: —

Assets.	£	Liabilities.	£
Coin and bullion, . .	38,990,000	Notes in circulation, .	42,016,000
Discounts and advances,	21,230,000	Current accounts, .	16,565,000

Netherlands Bank.

The Bank of the Netherlands was first chartered in 1814, with a capital of 5,000,000 florins. This has been increased at various times, and is now 10,000,000 florins ($4,000,000). The following was the condition of the bank in May, 1887: —

Assets.	£	Liabilities.	£
Coin and Bullion—Gold, .	4,909,000	Notes in circulation, .	17,324,009
" " Silver,	8,236,000	Deposits, . . .	1,548,000
Discounts and advances,	8,694,000		

Prices and Dividends of European Bank Stocks.

Paid-up Capital.	Dividend Last 12 Mos.	Am't of Share.	Name.	Paid.	Market Prices.
£	*Per cent.*	£		£	£
14,553,000	10	Stock,	Bank of England, . .	100 %	295
2,800,000	15	100	London and Westminster Bank, ...	20	64¼
2,000,000	20	80	London and County Banking Co., ...	20	84
1,250,000	14	150 %	Bank of Scotland, . .	Stock,	318
2,000,000	9	Stock,	Royal Bank of Scotland, .	100 %	215
2,769,230	–	Stock,	Bank of Ireland, . .	100 %	273
Francs.		*Francs.*		*Francs.*	*Francs.*
182,500,000	29¼	1,000	Bank of France, . .	1,000	4,130
Marks.		*Marks.*			
120,000,000	6¼	3,000	Imperial Bank of Germany,	100 %	136¾ %
Florins.		*Flor.*		*Flor.*	
10,000,000	$12^{1}/_{10}$	1,000	Bank of the Netherlands, .	1,000	225

Rates of Interest since 1850.

	1851-60.	1861-70.	1871-80.	Average of 30 years.
Great Britain, . . .	4.17	4.23	3.28	3.89
France, ...	4.30	3.55	3.94	3.93
Germany, ...	4.05	4.56	4.30	4.30
Austria, ...	5.26	4.77	4.79	4.94
Italy, ...	5.35	5.69	4.85	5.30
Holland, ...	3.60	3.98	3.40	3.67
Belgium, ...	3.62	3.59	3.60	3.60
Europe, ...	4.27	4.30	3.71	4.09

Canadian Banks.

Paid-up Capital.	Dividend Last 12 Months.	Amount of Share.		Paid.	Market Prices.
$12,000,000	12%	$200	Bank of Montreal, . .	$200	$494
6,000,000	7%	50	Canadian Bank of Commerce,	50	62½
5,753,883	7%	100	Merchants' Bank of Canada,	100	132⅔
£1,000,000	6%	£50	British Bank of N. America,	£50	£68

Since 1840 the banking of the world has increased about eleven-fold; that is, three times as fast as commerce, or thirty times faster than population.

CAPITAL ENGAGED IN BANKING.

	Millions £.			Amount per Inhabitant.
	Capital.	Deposits.	Total.	
United Kingdom,	270	570	840	£25
France,	55	150	205	6
Germany,	85	200	285	6
Russia,	45	110	155	2
Austria,	36	130	166	5
Italy,	31	60	91	3
Spain and Portugal,	12	10	22	1
Belgium,	7	20	27	5
Holland,	6	20	26	7
Scandinavia,	11	24	35	4
Europe,	558	1,294	1,852	£6
United States,	145	386	531	10
Canada,	17	18	35	8
Australia,	19	66	85	30
Totals,	739	1,764	2,503	£7

BANKING AND CURRENCY IN THE UNITED STATES.

Paper money was issued from time to time by the different colonies, Massachusetts taking the lead in 1690. During the Revolutionary War the distress attendant upon the depreciation of the continental currency (the amount of which had grown to $240,000,000) was so great that some public measure of relief was necessary. In May, 1781, Robert Morris made public his scheme for a bank; the Bank of North America was incorporated Dec. 31, 1781. Its capital was $400,000, of which the government subscribed $254,000. At the expiration of its charter in 1787 it was rechartered by Pennsylvania, and it exists to-day as a national bank, with a capital of $1,000,000, and a surplus of $1,000,000.

In 1790, Hamilton urged the establishment of a bank, and laid before Congress a plan for such an institution. The bank was incorporated in February, 1791. Its capital was limited to $10,000,000, the government subscribing $2,000,000; the shares were all taken as soon as offered. The bank was a success, its dividends during the twenty years of its history averaging eight and one-fourth per cent. per annum. In 1811, Congress refused to renew its charter. The stockholders eventually received one hundred and nine per cent., but owing to the length of time between the payments their stock really netted them less than par.

The number of State banks in the country at this time was ninety; in 1813 their number increased to one hundred and fifty, with a circulation amounting to $62,000,000. The New England banks suspended specie payments in 1814, but resumed at the beginning of 1817.

State bank notes having become very unstable in value, Congress, in 1816, chartered the second United States bank. The capital was $35,000,000, of which the government subscribed $7,000,000. The State banks, however, increased rapidly. In 1816 they numbered two hundred and forty-six, with $90,000,000 capital; in 1830 the number had grown to three hundred and thirty, with $145,000,000 capital. In July, 1832, the bill to recharter the United States bank was vetoed by President Jackson, and the institution terminated its existence as a national bank in 1836. The following report was made to Congress at the close of its legal existence: —

Estimated value of all assets, ...	$68,268,740 63
Debts due by the bank, ...	29,253,610 27
Estimated value of its stock, ...	$39,015,130 36
Equal to $111.47 per share.	

The bank continued operations under a charter from Pennsylvania for a few years, but in 1841 its stock became worthless.

The refusal to recharter the United States Bank led to the incorporation of a large number of State banks. The capital of many of these was fictitious or but partly paid up, and the power of circulation granted them was almost unlimited. In 1837 there were 788 State banks, with a capital of $291,000,000; $149,000,000 in circulating notes, $127,000,000 in deposits, and $525,000,000 in loans and discounts. The remarkable expansion and the wild speculations of this period resulted in the panic of 1837, the worst the country has ever known. Specie payments were suspended, values fell, and a period of distress followed which lasted nearly five years. From Jan. 1, 1837, to Jan. 1, 1843, the banking circulation of the country fell from $145,185,890 to $58,563,608; banks decreased in number ninety-seven, banking capital nearly $62,000,000, deposits $71,500,000, loans and discounts $270,500,000, and specie in bank nearly $5,000,000.

The crisis of 1837 led to the adoption of the Suffolk Bank system in Boston. This was an arrangement by which the Suffolk Bank received the notes of all New England banks finding their way to Boston, and returned them for immediate redemption. The State of New York put in operation the New York safety fund system, under which banks were compelled to deposit securities with the banking department of the State to provide against failures. Jan. 1, 1847, the United States sub-treasury system went into operation, since which time the government has collected and disbursed its revenue without the intervention of the banks.

In 1857 there was another crash, and all the banks in the Union suspended specie payments; the depression did not, however, continue long.

The following table gives the number of State banks reported to the Treasury Department each year from 1837 to 1862, inclusive, together with their aggregate capital, deposits, circulation, loans and discounts, and specie: —

NUMBER OF STATE BANKS REPORTED TO THE TREASURY DEPARTMENT EACH YEAR FROM 1837 TO 1862, INCLUSIVE, TOGETHER WITH THEIR AGGREGATE CAPITALS, DEPOSITS, CIRCULATION, LOANS AND DISCOUNTS, AND SPECIE.

YEAR.	No. of Banks.	00,000 omitted.				
		Capital.	Deposits.	Circulation.	Loans and Discounts.	Specie.
1837, . . .	788	$290,7	$127,3	$149,1	$525 1	$37,9
1838, . . .	829	317,6	84,6	116,1	485,6	35,1
1839, . . .	840	327,1	90,2	135,1	192,2	46,1
1840, . . .	901	358,4	75,6	106,9	462,8	33,1
1841, . . .	784	313,6	64,8	107,2	386,4	25,8
1842, . . .	692	260,1	62,4	83,7	323,9	28,4
1843, . . .	691	228,3	56,1	58,5	254,5	33,5
1844, . . .	696	210,8	84,5	75,1	264,9	49,8
1845, . . .	707	206,0	88,0	89,6	288,6	44,2
1846, . . .	707	196,8	96,9	105,5	312,1	42,0
1847, . . .	715	203,0	91,7	105,5	310,2	35,1
1848, . . .	751	204,8	103,2	128,5	344,4	46,3
1849, . . .	782	207,3	91,1	114,7	332,3	43,6
1850, . . .	824	217.3	109,5	131,3	364,2	45,3
1851, . . .	879	227,8	128,9	155,1	413,7	48,6
1852, . . .	750	207,9	145,5	146,0	408,9	46,1
1853, . . .	1,208	301,3	188,1	204,6	557,3	59,4
1854, . . .	1,307	332,1	190,4	186,9	576,1	53,9
1855, . . .	1,398	343,8	212,7	195,7	634,1	59,3
1856, . . .	1,416	370,8	230,3	214,7	684,4	58,3
1857, . . .	1,422	394,6	185,9	155,2	583,1	74,4
1858, . . .	1,476	401,9	259,5	193,3	657,1	104,5
1859, . . .	1,568	422,1	253,8	207,1	692,0	83,6
1860, . . .	1,569	429,5	257,2	202,0	696,7	87,6
1861, . . .	1,496	419,7	297,1	183,9	647,6	102,2
1862, . . .	1,466	405,0	393,6	238,6	648,6	101,2

At the outbreak of the civil war in 1861 the paper in circulation in the United States amounted to $200,000,000, of which $50,000,000 represented Southern banks. The specie available for circulation was $275,000,000. The government borrowed $50,000,000 of the banks of the large cities on demand notes. In February, 1862, Con-

gress authorized the issue of $150,000,000 of legal tenders, $50,000,000 of which was to take up these notes. The national banking system dates from the act of Feb. 25, 1863, creating the currency bureau and establishing the office of comptroller of the currency. The act was for the purpose of assisting the government loans. Under it the comptroller was authorized to permit the establishment of banking associations of not less than five persons, and a minimum capital, except in small places, of $100,000. The associations were obliged, before commencing business, to deposit with the Treasury Department of the United States, bonds to the extent of one-third of the capital; for which they were to receive circulating notes, equal to ninety per cent. of the market value of the bonds, but not beyond ninety per cent. of par. The issue of currency was limited to $300,000,000, to be apportioned among the States according to population and banking capital. A large portion of the State banks took charters under the new system. Specie soon went out of circulation.

The general resumption of specie payments took place Jan. 1, 1879.

The bank act provided for an existence not exceeding twenty years. As the charters of some of the banks organized in 1863 expired, or were about to expire, before the passage of the act of July 12, 1882, providing for extending the corporate existence of national banks, about fifty of them reorganized, and took new charters. Since this time, nearly all expiring bank charters have been renewed.

SUMMARY OF NATIONAL BANKS ORGANIZED AND DISSOLVED SINCE FEB. 25, 1863, AND THE NUMBER EXISTING NOV. 1, 1886.

BANKS ORGANIZED.	Number.	DISSOLVED.					Nowexisting.	
		In Liquidation, voluntary or by expiration.		Failed.		Total number dissolved.	Number.	Per Cent.
		No.	Per Ct.	No.	Pr. Ct.			
Converted from State system, . . .	575	66	12	19	3	85	490	85
Other banks, . .	3,005	534	18	93	3	627	2,378	79
Total, . . .	3,580	600	17	112	3	712	2,868	80

Of 600 banks which have gone into voluntary liquidation, 456 took that step for the purpose of winding up their affairs, 79 for the purpose of reorganization, and 65 went into liquidation by reason of expiration of charter, 38 of them having since been reorganized.

BANK PROFITS.

Year ending Sept. 1.	No. of Banks.	Millions Capital.	Millions Surplus.	Millions Dividends.	Millions Net Earnings.	Ratio of Dividends to Capital.	Ratio of Div'ds to Cap. and Surplus.	Ratio of Earn'gs to Cap. & Surp's.
1870, . .	1,601	$425	$91	$42	$55	10.12	8.35	10.96
1871, . .	1,693	445	98	44	54	10.14	8.31	10.23
1872, . .	1,852	465	105	46	58	10.19	8.33	10.36
1873, . .	1,955	488	118	49	65	10.31	8.30	10.87
1874, . .	1,971	489	128	48	59	9.90	7.87	9.68
1875, . .	2,047	497	134	49	57	9.89	7.81	9.22
1876, . .	2,081	500	132	47	43	9.42	7.45	6.87
1877, . .	2,072	486	124	43	34	8.93	7.09	5.62
1878, . .	2,047	470	118	36	30	7.80	6.21	5.14
1879, . .	2,045	455	115	34	31	7.60	6.07	5.49
1880, . .	2,072	454	120	36	45	8.02	6.35	7.88
1881, . .	2,100	458	127	38	53	8.38	6.59	9.20
1882, . .	2,197	473	133	40	53	8.73	6.81	8.88
1883, . .	2,350	494	141	40	54	8.30	6.50	8.60
1884, . .	2,582	518	147	41	52	8.00	6.20	8.00
1885, . .	2,665	524	146	40	43	7.80	6.00	6.50
1886, . .	2,784	532	155	42	55	7.96	6.17	8.02

CONDITION OF THE NATIONAL BANKS, 1879–1887.

The following table exhibits the resources and liabilities of the national banks in operation at corresponding dates for the last nine years, in millions: —

	Oct. 2, 1879.	Oct. 1, 1880.	Oct. 1, 1881.	Oct. 3, 1882.	Oct. 2, 1883.	Sept. 30, 1884.	Oct. 1, 1885.	Oct. 7, 1886.	Mar. 4, 1887.
RESOURCES.									
Loans,	878	1,041	1,173	1,243	1,309	1,245	1,306	1,451	1,515
Bonds for circulation,	357	357	363	357	351	327	307	258	211
Other U. S. bonds,	71	43	56	37	30	30	31	32	32
Other stocks, bonds, etc.,	39	48	61	66	71	71	77	81	87
Due from other banks,	167	213	230	198	208	194	235	241	271
Real estate,	47	48	47	46	48	49	51	54	55
Specie,	42	109	114	102	107	128	171	156	171
Legal tender notes,	69	56	53	63	70	77	69	62	66
National bank notes,	16	18	17	20	22	23	23	22	24
Clearing-house exchange,	113	121	189	208	96	66	84	95	89
U. S. certificates of deposit,	26	7	6	8	10	14	18	5	7
Due from U. S. Treasurer,	17	17	17	17	16	17	14	13	11
Other resources,	22	23	26	28	28	33	36	37	36
Totals,	1,868	2,105	2,358	2,399	2,372	2,279	2,432	2,513	2,581
LIABILITIES.									
Capital stock,	454	457	463	483	509	524	527	548	555
Surplus fund,	114	120	128	132	142	147	146	157	164
Undivided profits,	41	46	56	61	61	63	59	66	67
Circulation,	313	317	320	315	310	289	269	228	186
Due to depositors,	736	888	1,033	1,134	1,063	993	1,120	1,191	1,244
Due to other banks,	201	267	294	259	270	246	299	308	352
Other liabilities,	6	8	11	13	14	15	10	12	11
Totals,	1,868	2,105	2,358	2,399	2,372	2,279	2,432	2,513	2,581
Number of banks,	2,048	2,090	2,132	2,269	2,501	2,664	2,714	2,852	2,909

NATIONAL BANK SHAREHOLDERS.

The capital stock of the 2,868 (Nov. 31, 1886) National banks is represented by 7,116,894 shares. Of these, 6,426,320, or over 90 per cent., are held by residents of the State in which the bank is located, and 690,574, or less than 10 per cent., by non-residents. In 1876, less than 90 per cent. of the stock was held by residents.

The number of shares held by natural persons is 6,524,143, or over 91 per cent., while the remainder are held as follows: 82,694 shares by religious, charitable, and educational institutions; 6,188 by municipal corporations; 490,993 by savings banks, trust companies, and insurance companies, and 12,897 by all other corporations.

The number of shareholders in national banks is 223,583, of which number 215,876, or over 96 per cent., are natural persons, while more than 88½ per cent. of all the stockholders are residents of the State in which the bank is located.

Of the 223,583 shareholders, 117,974, being more than half, hold ten shares or less; 78,781, or about a third, hold over ten shares but less than fifty; while those holding over fifty shares number only 26,828, or but little more than one-ninth of the whole.

Summary.

The Report of the Comptroller of the Currency for 1886 is accompanied by a diagram exhibiting in a striking manner the record of the national banking system during the twenty-one years since the war, from which the following summary has been made: —

On the 1st of January, 1866, there were 1,582 national banks; on the 7th of October, 1886, there were 2,852, — a net increase in number alone of 1,270.

	Jan. 1, 18 8	Oct. 7, 1886.	Highest Point touched.		Lowest P't touched.	
			Amt.	Date.	Amt.	Date.
	Mils.	Mils.	Mils.		Mils.	
Capital, ...	$403	$543	$543	Oct. 7, 1886	$403	Jan. 1, 1866
Capital, surplus, and undivided profits, .	475	772	772	Oct. 7, 1886	475	Jan. 1, 1866
Circulation, ...	213	228	341	Dec. 26, 1873	213	Jan. 1, 1866
Total investments in United States bonds,	440	291	712	Apr. 4, 1879	291	Oct. 7, 1886
Deposits, ...	522	1,173	1,173	Oct. 7, 1886	501	Oct. 8, 1870
Loans and discounts,	500	1,443	1,443	Oct. 7, 1886	500	Jan 1, 1866
Cash:						
National bank notes,	20	23	28	Dec. 31, 1883	11	Oct. 7, 1867
Legal tender notes,	187	63	205	Oct. 1, 1886	50	Mar. 11, 1882
Specie, ...	19	156	177	July 1, 1885	8	Oct. 1, 1875

An examination of this table shows that the aggregate capital, surplus, undivided profits, circulation, and deposits have increased from $1,210,000,000 in January, 1866, to $2,173,000,000 in October, 1886, which is less than double, while the loans and discounts have gone up from $500,000,000 to $1,443,000,000, which is nearly treble.

The investments in bonds have taken an opposite course. Amounting to $440,000,000 in 1866, increasing to $712,000,000 in April, 1879, they had subsided by 7th October last to $291,000,000, but little more than half what they were in 1866, and scarcely over a third of what they momentarily amounted to in 1879.

The specie, which at the beginning of the period was but $19,000,000, had got down in October, 1875, to $8,000,000, is now $156,000,000, and in July, 1885, was $177,000,000.

It is interesting to see how these changes appear when reduced to percentages. The capital, surplus, undivided profits, circulation, and deposits constitute together the fund upon which a bank does its business.

Loans and discounts, United States bonds, specie, etc., are different forms in which this fund is invested. Taking the fund at $1,210,000,000 in 1866 and at $2,173,000,000 in 1886, these investments represent the following proportions of those amounts, viz. : —

	1866.	1886.
Loans and discounts, ...	41.32	66.40
United States bonds, ...	36.36	13.39
Specie, ...	1.57	7.18
Total, ...	79.25	86.97

Another striking fact is that in 1866 the circulation was $213,000,000, and in 1886 it is only $228,000,000. At the former period, therefore, the circulation was nearly 45 per cent of the capital, surplus, and undivided profits, while now it is only about 29 per cent.

The Maverick National Bank.

This institution was organized as a State Bank May 10, 1854, and reorganized as a National Bank Dec. 14, 1864. It renewed its charter under the charter extension act of Congress, Dec. 14, 1884.

Mr. Asa P. Potter was chosen vice-president Jan. 14, 1873, and president Jan. 11, 1876.

Mr. Joseph W. Work was chosen assistant cashier July 1, 1879, and cashier May 1, 1884.

Mr. E. H. Lowell is assistant cashier.

The present directors are : Mr. Thomas Dana, Mr. N. B. Mansfield, Mr. Jonas H. French, Mr. Henry F. Woods, and Mr. Asa P. Potter.

The following is the latest statement of the assets and liabilities of the bank : —

March 31, 1887.

RESOURCES.

Loans,	$6,249,037 93
U. S. Bonds at Washington to secure circulation, par value,	200,000 00
U. S. Bonds to secure deposits,	100,000 00
U. S. Bonds on hand,	144,900 00
Sundry bond account,	913,970 50
Premium,	63,016 33
Real estate,	9,178 94
Due from approved reserved agents,	1,264,037 98
Due from other National banks,	527,581 37
Exchanges for clearing house,	1,263,184 93
Legal tender notes,	126,300 00
Specie,	825,061 00
Bills of other National banks, checks, and other cash items,	178,155 37
Reserve at Washington, five per cent. fund,	13,000 00
Total,	$11,877,423 45

LIABILITIES.

Capital stock paid in,	$400,000 00
Surplus fund,	600,000 00
Other undivided profits,	125,375 62
Dividends,	20,025 00
National Bank notes outstanding,	180,000 00
Individual deposits,	4,260,264 22
Bank deposits,	6,201,758 61
United States deposit,	90,000 00
Total,	$11,877,423 45

To show the progress in business, statements for ten and twenty years after the bank's establishment are herewith given: —

March 30, 1864.

RESOURCES.

Loans,	$740,472 81
Sundry bonds and stocks,	5,200 00
United States interest account,	3,412 75
United States notes,	11,371 69
Specie,	57,016 51
Bills and checks on other banks,	30,845 24
Total,	$848,319 00

LIABILITIES.

Capital,	$400,000 00
Profit and loss,	39,423 87
Deposits,	257,960 29
Dividends unpaid,	250 50
United States tax account,	1,300 26
Banks and bankers,	15,248 08
Circulation,	134,136 00
Total,	$848,319 00

March 26, 1874.

RESOURCES.

Loans,	$946,500 79
United States bonds at Washington, D. C., to secure circulation,	275,000 00
Due from approved reserve agents,	107,959 36
Sundry banks,	13,370 73
Clearing house,	56,718 06
Legal tenders,	80,350 00
Specie,	3,587 50
Bills, checks on Assistant Treasurer and Trust Companies,	28,011 29
Total,	$1,511,497 73

LIABILITIES.

Capital,	$400,000 00
Surplus fund,	80,000 00
Profit and loss,	111,905 22
Deposits,	553,503 24
Banks and bankers,	125,010 27
Dividends unpaid,	502 00
Circulation,	240,577 00
Total,	$1,511,497 73

Telegraph Code.

The following telegraph code is in use by correspondents of the Maverick National Bank for purchases, sales, and exchanges of United States bonds. It is the code in general use for telegraphing between bankers.

Securities.

Regd. 4½s, 1891,	Maine.
Coup. do.	Delaware.
Regd. 4s of 1907,	Columbia.
Coup. do.	Montana.
U. S. Currency 6s,	Idaho.

Called Bonds,	Nevada.
Regd. District of Columbia 3-65s,	Kentucky.
Coup. do. do.	Texas.

PHRASES.

At what will you sell,	Europe.
At what will you buy,	Asia.
At what can you buy for us,	Rome.
All right — we take the — at,	Sweden.
All right — we sell you the — at,	Norway.
Answer by mail,	Canada.
Buy for our account,	Ireland.
Buy at best rate,	Belgium.
Bonds held at Washington as security for circulation,	Egypt.
Deposit at Washington as security for circulation,	Palestine.
Hold for instructions,	Frankfort.
How does market look,	Toronto.
If accepted immediately by wire,	Glasgow.
If bought, sell out again,	Paris.
If sold, buy back,	London.
If unsold on receipt of your answer,	Pekin.
Make best bid for,	Persia.
Market is very active,	Ontario.
Market is very dull,	France.
Market unsettled. Can't name price to keep open,	Portugal.
Order good until countermanded,	Malta.
Scarce and in demand,	England.
Sell for our account,	Italy.
Sell at best rate,	Scotland.
Send by express,	Berlin.
Send by mail,	Amsterdam.
Telegraph us an order and we will do the best we can,	Spain.
Too late to do anything.	Austria.
We accept your offer,	India.
We are out of,	Dublin.

We are full of,	Edinburgh.
We are unable to draw. Please remit,	Moscow.
We can buy for you,	Russia.
We decline your offer,	China.
We do not wish to sell,	Japan.
We do not wish to buy,	Denmark.
We have sold for your account,	Holland.
We have bought for your account,	Wales.
We hold for instructions,	Vienna.
We raise limit to,	Syria.
We reduce limit to,	Greece.
We send by express,	Brussels.
We send by mail,	Liverpool.
We will sell,	Africa.
We will buy,	America.
We will give,	Naples.

AMOUNTS.

Belle,	1,000	George,	110,000
Ellen,	2,000	Fanny,	120,000
Lottie,	3,000	Jane,	125,000
Louisa,	4,000	Edward,	130,000
Thomas,	5,000	Sally,	140,000
John,	10,000	Laura,	150,000
William,	20,000	Richard,	160,000
Blossom,	25,000	Miriam,	170,000
Martin,	30,000	Adolph,	180,000
Luther,	40,000	Mark,	190,000
Alexander,	50,000	Luke,	200,000
Stephen,	60,000	Matthew,	225,000
Joseph,	70,000	Samuel,	250,000
Henry,	75,000	Peter,	300,000
Charles,	80,000	Robert,	400,000
Mary,	90,000	Gypsy,	500,000
Emily,	100,000	Choctaw,	1,000,000

Rates.

ONE.	FOUR.	SEVEN.
1⅛ Broad.	4⅛ Green.	7⅛ Pine.
1¼ Bank.	4¼ Gaskill.	7¼ Park.
1⅜ Beaver.	4⅜ Gay.	7⅜ Pear.
1½ Bond.	4½ George.	7½ Poplar.
1⅝ Brook.	4⅝ German.	7⅝ Plum.
1¾ Brown.	4¾ Girard.	7¾ Prince.
1⅞ Button.	4⅞ Grape.	7⅞ Prune.
TWO.	**FIVE.**	**EIGHT.**
2⅛ Chestnut.	5⅛ Locust.	8⅛ Race.
2¼ Cedar.	5¼ Laurel.	8¼ Rawle.
2⅜ Centre.	5⅜ Lemon.	8⅜ Read.
2½ Cherry.	5½ Linden.	8½ Ritner.
2⅝ Church.	5⅝ Lilly.	8⅝ Rose.
2¾ Clinton.	5¾ Logan.	8¾ Rush.
2⅞ Crown.	5⅞ Lombard.	8⅞ Rye.
THREE.	**SIX.**	**NINE.**
3⅛ Front.	6⅛ Matron.	9⅛ Spruce.
3¼ Federal.	6¼ Master.	9¼ Sansom.
3⅜ Filbert.	6⅜ Marshal.	9⅜ Shippen
3½ Franklin.	6½ Melon.	9½ Small.
3⅝ Fayette.	6⅝ Minor.	9⅝ Spring.
3¾ Farr.	6¾ Myrtle.	9¾ South.
3⅞ Fulton.	6⅞ Mulberry.	9⅞ Summer

	NOUGHT.	
0⅛ Walnut.	0½ Weaver.	0⅞ Willow.
0¼ Warren.	0⅝ West.	$0\frac{1}{16}$ Pin.
0⅜ Water.	0¾ Wood.	$0\frac{1}{32}$ Needle

CHAPTER VII.

COINAGE AND CURRENCY.

Oriental and European Coinage. — Colonial Coinage. — The Silver Dollar. — United States Coinage. — Value of Foreign Coins. — Legal Tender and Bank Notes Statistics. — The Distribution of the Currency of the United States. — Gold and Silver Production. — Ratio of Silver to Gold.

Primitive Coins.

Gold and silver were in use among the Orientals as money long before the beginning of authentic history. It is said of Abraham that "he was rich in silver and gold, and bought a sepulchre for his wife Sarah for four hundred shekels of silver" ($250). The Lydians are said to have been the first to coin money. The standard money of Greece, down to a comparatively recent date, was silver. Gold coins were in circulation, but they were of foreign origin. Philip of Macedon was the first to introduce gold coinage into Greece; later, the spoils of Alexander made the article common. The Romans for a long time used only bronze and copper coins. Their first silver money was made 269 B. C.; their first gold coin not until 207 B. C.

The study of modern coinage is somewhat perplexing on account of the frequent changes in the names of the coins. Of the mediæval coins the Sequin, mentioned so often in the "Arabian Nights," is still in use. It origi-

nated in Venice and was called Zecchino, from the mint at which it was coined. It is still common in the Levant. The English guinea is perhaps the finest gold coin ever struck. It was so named because first made from gold brought from the Guinea coast in the reign of Charles II.

The first coins made for American use were of brass, and were struck in the Bermudas in 1612 for the Virginia Company. In 1652 Massachusetts instituted the coinage of "pine tree" money. Although this coinage was not discontinued until 1686, the "pine tree shillings" all bore the date 1652.

In 1785 Congress ordered the adoption of the decimal system. The United States Mint was organized in 1793. The first deposit of gold bullion for coinage was made Feb. 12, 1795, by Moses Brown, a merchant of Boston. It consisted of gold ingots, amounting to two thousand two hundred and seventy-six dollars and twenty-two cents ($2,276.22).

Our Silver Dollar.

Previous to July 6, 1785, the English coinage was in common use. On that date the Continental Congress established the dollar, although the exact weight was not fixed until Aug. 8, 1786, when it was made to equal about that of the old Spanish dollar. The dollar did not originate with the Spanish, but was first coined at Joachaimsthal, a mining town in Bohemia. A brief history of the standard silver dollar is as follows: —

Authorized to be coined, Act of April 2, 1792. Weight, 416 grains, standard silver; fineness, 892.4; equivalent to 371¼ grains of fine silver, with 44¾ grains alloy of pure copper.

Weight changed, Act of Jan. 18, 1837, to 412½ grains, and fineness changed to 900, preserving the same amount of pure silver = 371¼ grains, with 1-10 alloy.

Coinage discontinued, Act of Feb. 12, 1873.

Total amount coined, from 1792 to 1873, $8,045,838.

Coinage revived, two million dollars worth of silver per month required to be coined, and issue made legal tender for all debts, public and private, Act of Feb. 28, 1878.

Total amount coined, Feb. 28, 1878, to Nov. 1, 1886, $247,131,549.

Specie in the United States.

The Director of the Mint estimated the gold and silver currency in the United States on June 30, 1879, the year of the resumption of specie payments, as follows: Gold, $286,490,698; silver, $112,050,985. Total, $398,541,683.

June 30, 1885, the present Director of the Mint estimates that the coin circulation of the United States aggregated — Gold, $542,174,636; silver, $278,824,201. Total, $820,998,837.

Coinage of the U. S. Mints, Fiscal Year to June 30, 1886.

Gold coinage, ...	$34,077,380 00
Silver coinage — silver dollars, . .	29,838,905 00
halves, quarters, and dimes, . . .	183,442 95
Minor coinage — five, three, and one cent pieces, . .	17,377 65
Total coinage, ...	$64,117,105 60

TABLE SHOWING THE LEGAL WEIGHT AND FINENESS OF THE COINS OF THE UNITED STATES, AND THEIR DIAMETER AND THICKNESS.

	Legal weight (Grains).	Fineness (1,000ths).	Diameter (20ths of an inch).	Thickness (1,000ths of an inch).
GOLD.				
Double eagle,	516	900	27	77
Eagle,	258	900	21	60
Half eagle,	129	900	17	46
Three dollars,	64.5	900	16	34
Quarter eagle,	77.4	900	15	34
Dollar (new),	25.8	900	11	18
SILVER.				
Trade dollar,	420	900	30	82
Standard dollar,	412.5	900	30	80
Half dollar,	192.9	900	24	57
Quarter dollar,	96.45	900	19	45
Twenty cents,	77.16	900	17½	47
Dime,	38.58	900	14	32
Half dime,	19.2	900	12	23
Three cents,	11.52	900	11	18
MINOR.				
Five cents,	77.16	75% copper, 25% nickel,	16	62
Three cents,	30	75% copper, 25% nickel,	14½	34
Two cents,	96	95% copper, 5% tin and zinc,	18	60
One cent,	48	95% copper, 5% tin and zinc,	15	43

THE SPACE REQUIRED FOR THE STORAGE OF UNITED STATES GOLD AND SILVER COINS.

DESCRIPTION.	Amount.	How put up.	Space required.
Gold coin,	$1,000,000	$5,000 in 8-oz duck bags.	Nearly 17 cubic feet.
Silver dollars,	1,000,000	1,000 in 8-oz. duck bags.	250 cubic feet.
Subsidiary silver,	1,000,000	1,000 in 8-oz. duck bags.	150 cubic feet.

The space occupied by a bag of standard silver dollars, piled in a mass, is 12 inches long, 9 wide, and 4 deep. Small silver packs better than dollars. The

weight of a thousand dollars in subsidiary silver being 56 ounces less than that of an equal value in standard silver dollars, the spaces occupied by each vary but little from each other.

VALUE OF FOREIGN COINS.

Country.	Monetary Unit.	Standard.	Value in U. S. Money.	Standard Coin.
Argentine Rep	Peso,	G. and S.	.96,5	1-20, 1-10, 1-5, 1-2, and 1 peso, 1-2 argentine
Austria,	Florin,	Silver,	.35,9	and argentine.
Belgium,	Franc,	G. and S.	.19,3	5, 10, and 20 francs
Bolivia,	Boliviano,	Silver,	.72,7	Boliviano.
Brazil,	Milreis of 1,000 reis,	Gold,	.54,6	
Canada,	Dollar,	Gold,	$1.00	escudo.
Chili,	Peso,	G. and S.	.91,2	Condor, doubloon and
Cuba,	Peso,	G and S	.93,2	1-16, 1-8, 1-4, 1-2, and 1 doubloon.
Denmark,	Crown,	Gold,	.26,8	10 and 20 crowns.
Ecuador,	Peso,	Silver,	.72,7	Peso. piasters.
Egypt,	Piaster,	Gold,	.04,9	5, 10, 25, 50, and 100
France,	Franc,	G and S.	.19,3	5, 10, and 20 francs.
Germ'n Empire	Mark,	Gold,	.23,8	5, 10, and 20 marks.
Great Britain,	Pound sterling,	Gold,	4.86,6½	1-2 sovereign and sovereign.
Greece,	Drachma,	G and S.	.19,3	5, 10, 20, 50, and 100 drachmas.
Hayti,	Gourde,	G. and S	.96,5	1, 2, 5, and 10 gourdes.
India,	Rupee of 16 annas,	Silver,	.34,6	
Italy,	Lira,	G. and S.	.19,3	5, 10, 20, 50, and 100 lire.
Japan,	Yen,	Silver,	.78,4	1, 2, 5, 10, and 20 yen,
Liberia,	Dollar,	Gold,	1.00	gold and silver yen.
Mexico,	Dollar,	Silver,	.79	Peso or dollar, 5, 10, 25,
Netherlands,	Florin,	G and S.	.40,2	and 50 centavo.
Norway,	Crown,	Gold,	.26,8	10 and 20 crowns.
Peru,	Sol,	Silver,	.72,7	Sol.
Portugal,	Milreis of 1,000 reis,	Gold,	1.08	2, 5, and 10 milreis.
Russia,	Rouble of 100 copecks	Silver,	.58,2	1-4, 1-2, and 1 rouble.
Spain,	Peseta of 100 centimes	G and S.	.19,3	5, 10, 20, 50, and 100 pesetas
Sweden,	Crown,	Gold,	.26,8	10 and 20 crowns.
Switzerland,	Franc,	G and S.	.19,3	5, 10, and 20 francs.
Tripoli,	Mahbub of 20 piasters	Silver,	.65,6	
Turkey,	Piaster,	Gold,	.04,4	piasters.
U. S. Colombia	Peso,	Silver,	.72,7	25, 50, 100, 250, and 500
Venezuela,	Bolivar,	G. and S.	.19,3	Peso. bolivar.
				5, 10, 20, 50, and 100

LEGAL TENDERS AND BANK NOTES.

In the following table are given the amounts and kinds of the outstanding currency of the United States and of the national banks on January 1, of each year, from 1866

to 1886, and on Nov. 1, 1886, to which is prefixed the amount on Aug. 31, 1865, when the public debt reached its maximum.

[000 omitted.]

DATE.	United States Issues.			Notes of Nat'l Banks, including Gold Notes.	Aggregate.	Currency Price of $100 Gold.	Gold Price of $100 Currency.
	Legal Tender Notes.	Old Demand Notes.	Fractional Currency.				
Aug. 31, 1865, .	$432,553	$402	$26,344	$176,213	$635,515	$144 25	$69 32
Jan. 1, 1866, .	425,839	392	26,000	236,636	688,867	144 50	69 20
Jan. 1, 1867, .	380,276	221	28,732	298,588	707,819	133 00	75 18
Jan. 1, 1868, .	356,000	159	31,597	299,846	687,602	133 25	75 04
Jan. 1, 1869, .	356,000	128	34,215	299,747	690,091	135 00	74 07
Jan. 1, 1870, .	356,000	113	39,762	299,629	695,505	120 00	83 33
Jan. 1, 1871, .	356,000	101	39,995	306,307	702,403	110 75	90 29
Jan. 1, 1872, .	357,500	92	40,767	328,465	726,826	109 50	91 32
Jan. 1, 1873, .	358,557	84	45,722	344,582	748,947	112 00	89 25
Jan. 1, 1874, .	378,401	79	48,544	350,848	777,874	110 25	90 70
Jan. 1, 1875, .	382,000	72	46,390	354,128	782,591	112 50	88 89
Jan. 1, 1876, .	371,827	69	44,147	346,479	762,523	112 75	88 69
Jan. 1, 1877, .	366,055	65	26,348	321,595	714,064	107 00	93 46
Jan. 1, 1878, .	349,943	63	17,764	321,672	689,443	102 87	97 21
Jan. 1, 1879, .	346,681	62	16,108	323,791	686,642	100 00	100 00
Jan. 1, 1880, .	346,681	61	15,674	342,387	704,804	100 00	100 00
Jan. 1, 1881, .	346,681	60	15,523	344,355	706,620	100 00	100 00
Jan. 1, 1882, .	346,681	59	15,451	362,421	724,614	100 00	100 00
Jan. 1, 1883, .	346,681	59	15,398	361,882	724,021	100 00	100 00
Jan. 1, 1884, .	346,681	58	15,365	349,949	712,054	100 00	100 00
Jan. 1, 1885, .	346,681	58	15,347	329,158	691,245	100 00	100 00
Jan. 1, 1886, .	346,681	57	15,335	317,443	679,517	100 00	100 00
Nov. 1, 1886, .	346,681	57	15,329	301,529*	663,597	100 00	100 00

* Includes $296,069 notes of gold banks and $220,599 mutilated currency in transit.

Paper Money in the United States.

The following table shows, by denominations, the amount of national bank and legal tender notes outstanding on Nov. 1, 1886, and the aggregate amounts of both kinds of notes at the same period in 1884 and 1885:

Denominations.	1886.			1885.	1884.
	National Bank Notes.	Legal Tender Notes.	Aggregate.	Aggregate.	Aggregate.
Ones, . . .	$409,690	$14,319,238	$14,728,928	$23,139,173	$27,258,339
Twos, . .	215,426	14,938,315	15,153,741	23,472,420	27,067,206
Fives, . .	82,790,440	97,990,310	180,780,750	166,024,949	163,363,205
Tens, . . .	99,286,920	71,257,924	170,544,844	175,214,630	130,491,836
Twenties, . .	70,955,280	56,745,463	127,700,743	137,023,737	135,277,089
Fifties, . .	18,193,650	21,698,945	39,892,595	43,535,145	44,617,045
One-hundreds, .	28,667,100	29,232,820	57,899,920	61,221,790	66,170,690
Five-hundreds, .	393,000	8,495,500	8,888,500	15,750,500	16,063,500
One-thousands,	79,000	32,942,500	33,021,500	22,041,500	19,659,500
Five-thousands,	–	50,000	50,000	95,000	105,000
Ten-thousands,	–	10,000	10,000	30,000	60,000
Add for unredeemed fragments of National Bank Notes, . .	+22,715	–	–	+21,890	+20,749
Deduct for Legal Tender Notes destroyed in Chicago fire, . .	–	—1,000,000	–	—1,000,000	—1,000,000
Totals, .	$301,013,221	$346,681,016	$647,694,237	$661,575,834	$679,154,709

Distribution of the Currency of the United States.

	Nov. 1, 1883.	Nov. 1, 1884.	Nov. 1, 1885.	Nov. 1. 1886.
Gold.	Millions.	Millions.	Millions.	Millions.
In Treasury, less certifs.,	157	134	142	158
In Nat'l Banks, incl. certifs.,	97	117	161	144
In State Banks, incl. certifs.,	18	25	31	24
Total gold,	273	277	335	327
Silver.				
In Treasury, standard silver dollars,	116	142	163	182
In Treasury, bullion,	4	4	3	3
In Treasury, fractional coin,	26	29	22	26
In National Banks,	10	8	9	11
Total silver,	157	185	199	224
Paper Currency.				
In Treasury, less certifs.,	30	26	27	30
In Nat'l Banks, incl. certifs.,	103	114	111	91
In State Banks, incl certifs.,	28	32	39	14
In Savings Banks,	12	14	13	19
Total currency,	175	187	192	156
Grand totals,	606	650	727	709

If the amounts of gold and silver coin and of currency in the treasury and the banks be deducted from the aggregate amount in the country, the remainder will be, approximately, the amounts in the hands of the people, as follows: —

Current Money.	Nov. 1, 1881.	Nov. 1, 1882.	Nov. 1, 1883.	Nov. 1, 1884.	Nov. 1, 1885.	Nov. 1, 1886.
	Millions.	Millions.	Millions.	Millions.	Millions.	Millions.
Gold,	267	306	308	307	251	287
Silver,	82	80	84	90	107	107
Paper currency,	567	548	523	492	470	491
Totals,	918	936	916	891	829	876

Gold and Silver Production.

The discovery of America considerably increased the quantity of gold, and immensely increased the quantity of silver in existence. The discovery of the Russian gold mines made that country at a later date the chief gold-producing nation; but this position was taken from her on the discovery of the California and Australia mines.

The production of the precious metals from the earliest times to the close of 1886 is estimated at $26,883,000,000, of which $14,852,000,000 is put down to gold and $12,031,000,000 to silver. Allowing for loss, the present amount is placed at $13,974,000,000, — $8,352,000.000 gold and $5,622,000,000 silver.

Of this, $11,000,000,000 represents coin and bullion, and the remainder watches, plate, jewelry, and ornamental work.

Of the amount now in existence, $10,621,000,000 are estimated to have been obtained from America, $1,618,000,000 from Asia (including Australia, New Zealand, and Oceanica), $1,089,000,000 from Europe, and $646,000,000 from Africa.

In 1885, the product of the world was $226,530,000, — gold $101,526,000, silver $124,968,000; of which the United States is credited with $31,801,000 of gold and $51,600,000 of silver, a total of $83,401,000.

Recent figures give the product of the United States in 1886 as $35,000,000 of gold and $51,000,000 of silver, a total of $86,000,000.

Gold and Silver Product of the United States.

Year.	Gold.	Silver.	Total.	Year.	Gold.	Silver.	Total.
	Dollars.	Dollars.	Dollars.		Dollars.	Dollars.	Dollars.
1845,	1,008,327	*	1,008,327	1867,	51,725,000	13,500,000	65,225,000
1846,	1,239,357	–	1,139,357	1868,	48,000,000	12,000,000	60,000,000
1847,	889,085	–	889,085	1869,	49,500,000	12,000,000	61,500,000
1848,	10,000,000	–	10,000,000	1870,	50,000,000	16,000,000	66,000,000
1849,	40,000,000	–	40,000,000	1871,	43,500,000	23,000,000	66,500,000
1850,	50,000,000	–	50,000,000	1872,	36,000,000	28,750,000	64,750,000
1851,	55,000,000	–	55,000,000	1873,	36,000,000	35,750,000	71,750,000
1852,	60,000,000	†	60,000,000	1874,	33,490,902	37,324,594	70,815,496
1853,	65,000,000	–	65,000,000	1875,	33,467,856	31,727,560	65,195,416
1854,	60,000,000	–	60,000,000	1876,	39,929,166	38,783,016	78,712,182
1855,	55,000,000	–	55,000,000	1877,	46,897,390	39,793,573	86,690,963
1856,	55,000,000	–	55,000,000	1878,	51,206,360	45,281,385	96,487,745
1857,	55,000,000	–	55,000,000	1879,	38,899,858	40,812,132	79,711,990
1858,	50,000,000	500,000	50,500,000	1880,	36,000,000	38,450,000	74,450,000
1859,	50,000,000	100,000	50,100,000	1881,	34,700,000	43,000,000	77,700,000
1860,	46,000,000	150,000	46,150,000	1882,	32,500,000	46,800,000	79,300,000
1861,	43,000,000	2,000,000	45,000,000	1883,	30,000,000	46,200,000	76,200,000
1862,	39,200,000	4,500,000	43,700,000	1884,	30,800,000	48,800,000	79,600,000
1863,	40,000,000	8,500,000	48,500,000	1885,	31,801,000	51,600,000	83,401,000
1864,	46,100,000	11,000,000	57,100,000	1886,	35,000,000	51,000,000	86,000,000
1865,	53,225,000	11,250,000	64,475,000				
1866,	53,500,000	10,000,000	63,500,000	Total,	1,683,479,301	748,572,260	2,467,051,561

* From 1849 to 1858, estimated product $50,000 per annum.

† The silver mines of the United States were discovered in 1859.

Gold and Silver of Domestic Production deposited at the Mints and Assay Offices from their Organization, in 1793, to the close of the Fiscal Year ending June 30, 1886.

Locality.	Gold.	Silver.	Total.
Alabama,	$226,974 58	$64 02	$227,038 60
Alaska,	263,664 17	2,193 01	265,859 18
Arizona,	4,005,061 03	13,515,770 65	17,520,831 68
California,	740,061,407 17	3,925,546 95	743,986,954 12
Colorado,	50,087,096 25	23,910,646 24	73,997,742 49
Dakota,	25,912,794 26	552,639 59	26,465,433 85
Georgia,	8,415,475 79	3,461 54	8,418,937 33
Idaho,	28,242,403 89	1,397,222 91	29,639,626 80
Indiana,	40 13	–	40 13
Maine,	5,638 20	22 00	5,660 20
Maryland,	4,848 57	3 24	4,851 81
Massachusetts,	–	917 56	917 56
Michigan,	23,029 71	3,629,325 39	3,652,355 10
Montana,	57,942,047 01	13,588,327 90	71,530,374 91
Nebraska,	651 63	6 18	657 81
Nevada,	23,402,999 35	92,818,836 47	116,221,835 82
New Hampshire,	11,020 55	–	11,020 55
New Mexico,	2,434,412 84	5,555,100 10	7,989,512 94
North Carolina,	11,068,347 20	49,179 87	11,117,527 07
Oregon,	18,747,932 24	60,386 62	18,808,318 86
Pennsylvania,	1,138 34	2,588 47	3,726 81
South Carolina,	1,599,890 33	1,244 70	1,601,135 03
Tennessee,	87,665 93	10 15	87,676 08
Texas,	2,147 40	2,739 03	4,886 43
Utah,	783,343 95	18,973,228 37	19,756,572 32
Vermont,	85,598 21	49 94	85,648 15
Virginia,	1,715,578 01	222 29	1,715,800 30
Washington Territory,	398,181 95	1,772 97	399,954 92
Wyoming,	753,768 86	12,126 16	765,895 02
Other sources, or not reported,	37,169,366 65	41,793,414 43	78,962,781 08
Total unrefined,	$1,013,452,524 20	$219,797,048 75	$1,233,249,572 95
Refined bullion,	288,183,599 24	165,984,502 64	454,168,101 88
Grand Total,	$1,301,636,123 44	$385,781,551 39	$1,687,417,674 83

Gold and Silver Production of the United States, Calendar Year, 1885.

State or Territory.	Gold.	Silver.	Total.
Alaska,	$300,000	$2,000	$302,000
Arizona,	880,000	3,800,000	4,680,000
California,	12,700,000	2,500,000	15,200,000
Colorado,	4,200,000	15,800,000	20,000,000
Dakota,	3,200,000	100,000	3,300,000
Georgia,	136,000	–	36,000
Idaho,	1,800,000	3,500,000	5,300,000
Montana,	3,300,000	10,060,000	13,360,000
Nevada,	3,100,000	6,000,000	9,100,000
New Mexico,	800,000	3,000,000	3,800,000
North Carolina,	152,000	3,000	155,000
Oregon,	800,000	10,000	810,00
South Carolina,	43,000	–	43,000
Utah,	180,000	6,750,000	6,930,000
Washington,	120,000	70,000	190,000
Texas, Alabama, Tennessee, Virginia, Vermont, Michigan, and Wyoming,	90,000	5,000	95,000
Total (Mint Director's Estimate),	$31,801,000	$51,600,000	$83,401,000

The Ratio of Silver to Gold.

In 1687 the ratio of silver to gold was as 14.94 to 1. In 1702 the silver ratio, to gold as a unit, stood 15.52. In 1760 it was at 14.14, the highest silver value during the past two hundred years. The ratio in later years has been : —

Year.	Ratio.	Year.	Ratio.
1800,	15.63	1880,	18.05
1813,	16.25	1881,	18.16
1874,	16.17	1882,	18.19
1876,	17.88	1883,	18.64
1878,	17.94	1884,	18.57
1879,	18.40	1885,	19.41

CHAPTER VIII.

BANK CLEARING HOUSES.

History. — The United States Clearing Houses. — Number of Banks represented. — Managers. — Exchanges, 1885 and 1886. — Four Months of 1887 compared with 1886. — New York Clearances, by Years. — History of the Boston Clearing House. — Its Exchanges, by Years. — Clearances of the World.

History.

The bank clearing-house system was first established in London in the latter part of the last century. We find that in 1775 the London banks used a room in Lombard Street for exchanging checks and securities, reducing thereby the amounts of actual money used in settlements. But as early as 1773 there is a record in the books of Messrs. Martin & Co. which reads, "Quarterly charge for use of clearing room, 19*s.* 6*d.*" The record of the London clearing house is very meagre. Few data of the transactions previous to as late as 1840 can be obtained, though we know that in 1810 there was a London clearing house representing forty-six banks.

The New York Clearing-House Association was organized with fifty-five banks, representing an aggregate capital of $47,000,000, Oct. 3, 1853, and it began operations Oct. 11, 1853. The perfect record kept by this institution has induced the London and other clearing-house associations to preserve details of their transactions.

It is probable that the bank clearing houses in the United States (aggregating thirty-three and representing five hundred and thirty banks) exceed in number the clearing houses throughout Great Britain and Europe.

It is a noteworthy fact that the New York clearing house has had, in an existence of thirty-four years, but two managers, — Mr. George D. Lyman, manager until 1864, and Mr. William A. Camp, manager since that time. The clearing-house building is No. 14 Pine Street, and the property is owned by the associated banks. The largest exchanges ever settled here in any one day were on Feb. 28, 1881, and amounted to $295,822,422, and the smallest exchanges in any one day since the organization were on Oct. 30, 1857, and amounted to only $8,357,394. Feb. 28, 1881, one bank brought for clearing exchanges amounting to $31,772,391.

The following table will show the number of clearing houses in the United States, the date of organization, the number of banks represented, the managers, and the comparative exchanges in 1885 and 1886 : —

No.	Clearing House.	When Organized.	Number of Banks.	Manager.	Exchanges in Millions, 1886.	Exchanges in Millions, 1885.
1	New York, .	1853	64	William A. Camp, .	$34,000	$28,000
2	Boston, . .	1856	52	N. G. Snelling, .	4,095	3,490
3	Philadelphia, .	1858	37	John C. Boyd, .	2,912	2,380
4	Chicago, . .	1865	21	A. P. Smith, . .	2,604	2,318
5	St. Louis, . .	1868	19	Edward Chase, .	810	759
6	Baltimore, .	1858	23	William H. Wells, .	616	582
7	San Francisco, .	1876	16	Charles Sleeper, .	642	562
8	Pittsburgh, .	1866	19	J. M. Chaplin, .	409	356
9	New Orleans, .	1872	12	Isaac N. Maynard, .	387	385
10	Cincinnati, .	1866	20	William D. Duble,	514	445
11	Providence, .	1866	35	J. W. Vernon, .	233	216
12	Louisville, .	1876	21	Clinton McClarty, .	233	218
13	Milwaukee, .	1868	10	F. L. Baker, . .	196	186
14	Detroit, . .	1883	15	F. W. Hayes, .	106	142
15	Cleveland, .	1858	10	Louis Smies, . .	130	104
16	Indianapolis, .	1871	7	W. W. Wollen, .	91	66
17	Kansas City, .	1873	10	Cyrus S. Hawley, .	285	224
18	Hartford, . .	1872	15	George F Hills, .	87	81
19	New Haven, .	1872	10	J C. Bradley, .	58	55
20	Columbus, .	1868	15	John Field, . .	92	69
21	Memphis, . .	1869	6	E. Goldsmith, .	83	68
22	Peoria, . .	1880	9	B B. Blossom, .	40	41
23	Worcester, .	1861	8	L. W. Hammond, .	44	39
24	Springfield, .	1872	10	Arthur B. West, .	42	38
25	Lowell, . .	1876	7	G W Knowlton, .	27	24
26	Syracuse, . .	1874	8	G. F L. Car, . .	26	26
27	Portland, . .	1865	6	W. H. Hobbs, .	48	46
28	Omaha, . .	1884	6	W. H. S. Hughes, .	188	123
29	St. Joseph, .	1877	5	John T. Johnson, .	48	36
30	Denver, . .	1885	7	William D. Dodd, .	171	New
31	Galveston, .	1885	7	N. B Sligh, . .	71	New.
32	St. Paul, . .	1874	13	H P. Upham, .	154	118
33	Minneapolis, .	–	13	W. E. Burwell, .	164	125
			533		$49,346	$41,461

The exchanges of 1886 increased over 1885 by $7,884,947,365, or by 19 per cent.

The clearances of New York City were 66 per cent. of the 1885 clearances, and 69 per cent. of the 1886 clearances.

For the first four months of 1887 the clearances of thirty-five cities aggregated	$16,914,758,853
Same period in 1886, ...	15,773,391,193
Increase, ...	$1,141,367,660
Increase, per cent., ...	7.2

The yearly exchanges at New York, expressed in millions of dollars, have been as follows : —

NEW YORK CLEARING-HOUSE EXCHANGES.

Year ending Sept. 30.	No. of Banks.	Exchanges in Millions.	Year ending Sept. 30.	No. of Banks.	Exchanges in Millions.
1854	50	$5,750	1871	62	29,300
1855	48	5,362	1872	61	33,844
1856	50	6,906	1873	59	35,461
1857	50	8,333	1874	59	22,855
1858	46	4,756	1875	59	25,061
1859	47	6,448	1876	59	21,597
1860	50	7,231	1877	58	23,289
1861	50	5,915	1878	57	22,508
1862	50	6,871	1879	59	25,178
1863	50	14,867	1880	57	37,182
1864	49	24,097	1881	60	48,565
1865	55	26,032	1882	61	46,552
1866	58	28,717	1883	63	40,293
1867	58	28,675	1884	61	34,092
1868	59	28,484	1885	64	25,250
1869	59	37,407	1886	64	33,374
1870	61	27,804			

From the resumption of specie payments in 1879, to Oct. 1, 1880, $340,598,000 in gold coin was paid in balances, weighing about 559 tons of 2,240 pounds; in the year ending Oct. 1, 1881, there was paid $372,419,000 in gold coin, weighing about 617 tons of 2,240 pounds; in the year to Oct. 1, 1882, $250,550,000 gold coin, weighing about 424 tons. Since Oct. 4, 1882, the Government has issued United States gold certificates, and little or no gold coin is now used in the settlement of daily balances.

The largest amount of gold coin received in any one day since organization, in settlement of balances, was on the 11th of November, 1879, viz., $8,315,000, weighing about 15½ tons of 2,000 pounds.

In January, 1887, there were forty-five National banks in the city of New York, with $45,150,000 capital and $37,693,100 surplus; net deposits, $319,212,100; loans and discounts, $254,161,800. There were also twenty-eight State banks, with $13,862,700 capital and $8,097,200 surplus; net deposits, $77,837,200, and loans $73,761,-

100. The whole number of banks in the city of New York is (73) seventy-three (National and State), with aggregate capital and surplus, $104,803,000 ; net deposits, $397,049,300, and loans and discounts, $327,922,900.

The Boston Clearing House.

The Boston clearing house was opened March 29, 1856. Messrs. Haven, Hall, Lamb, Bates, and other prominent bank presidents were instrumental in forming the association, which included twenty-seven banks. The first officers were Franklin Haven, president, and William Thomas, secretary. Henry B. Groves was chosen manager. The first day's exchanges were $2,780,446.

Mr. Groves continued manager until his death in 1877, when he was succeeded by Mr. Nathaniel G. Snelling, the present manager, who had been assistant manager since 1861. The number of banks in the association is now fifty-two, representing a combined capital of $50,500,000. The operations of twenty-four outside banks in the vicinity of Boston are also embraced. The latter, under the constitution, must pay toward the expenses of the clearing house a sum to be annually fixed by the committee. No failure has ever occurred among the associated Boston banks, although the Metropolis discontinued business many years ago.

The system is about the same as in New York. The clearing hour is 10 A. M. ; messengers complete the delivery of their packages in five minutes. Thirty minutes are allowed for the proof and for delivering check tickets ; and for each delay of fifteen minutes beyond that time a fine of two dollars is imposed. Debtor banks must pay balances by 12.15 P. M. ; and the creditor banks receive them at 1.30. Balances are usually paid in certificates. Under the constitution one of the

associated banks is a depository of United States gold certificates, against which clearing-house certificates may be issued. Should a bank default in paying balances, any other bank responding to the manager's requisition for the deficiency may have its exchanges with the former bank cancelled, and be restored to its position before the exchange was made. Weekly statements are required from all banks. Porters and clerks in the clearing house, as well as manager, must give bonds.

The present officers of the association, elected April 11, 1887, are as follows: *Chairman*, James H. Beal; *Secretary and Manager*, Nathaniel G. Snelling; *Committee*, Reuben E. Demmon, Charles O. Billings, George Ripley, George E. Bullens, and W. S. Blanchard.

The following table shows the total yearly exchanges from March 29, 1856, to April 1, 1877: —

Year ending —		Year ending —	
April 1, 1857, . .	$1,415,923,238	April 1, 1873, . .	$2,674,943,559
" 1858, . .	1,288,618,000	" 1874, . .	2,569,657,757
" 1859, . .	1,263,557,000	" 1875, . .	2,516,166,339
" 1860, . .	1,454,313,000	" 1876, . .	2,449,279,426
" 1861, . .	1,504,697,000	" 1877, . .	2,300,099,683
" 1862, . .	1,170,478,000	" 1878, . .	2,313,884,072
" 1863, . .	1,555,774,874	" 1879, . .	2,243,804,716
" 1864, . .	1,840,718,000	" 1880, . .	2,953,818,031
" 1865, . .	2,445,984,000	" 1881, . .	3,455,987,062
" 1866, . .	2,257,356,000	" 1882, . .	4,128,524,974
" 1867, . .	2,199,979,715	" 1883, . .	3,632,853,311
" 1868, . .	1,870,339,804	" 1884, . .	3,442,688,762
" 1869, . .	2,051,791,420	" 1885, . .	3,312,459,804
" 1870, . .	2,139,143,244	" 1886, . .	3,721,676,952
" 1871, . .	2,158,974,696	" 1887, . .	4,128,333,964
" 1872, . .	2,495,774,858		

The decrease in 1868 was due to the contraction of currency by the withdrawal of legal tender notes under the Act of 1866. This measure, as generally interpreted, had the effect of lowering values and lessening the volume of business.

Clearing-House Exchanges of the World.

[Foreign money reduced to dollars.]

State or Country.	Location.	Date.	Amount.
New York,	New York City (63 banks),	Oct. 1, 1886,	$33,374,682,216
Massachusetts,	Boston (52 banks),	Oct. 1, 1886,	4,008,565,266
Pennsylvania,	Philadelphia (37 banks),	Oct. 1, 1886,	2,785,875,450
Illinois,	Chicago (20 banks),	Oct. 1, 1886,	2,560,369,272
	Other cities (27) of the United States (335 banks),	Oct. 1, 1886,	5,482,151,567
	Total U. S. (507 banks),		$48,211,643,771
England,[1]	London,	Jan. 1, 1886,	$26,816,871,486
	London (country clearings),	Jan. 1, 1886,	2,072,916,000
	Manchester,	Jan. 1, 1886,	543,975,979
	Newcastle-on-Tyne,	Jan. 1, 1886,	155,843,382
	Total England,		$29,589,606,847
France,[2]	Paris,	Jan. 1, 1886,	$768,747,832
Austria,[3]	Vienna,	Jan. 1, 1886,	$1,771,138,171
Germany,[4]	Hamburg,	Jan. 1, 1886,	$1,249,070,196
	Berlin,	Jan. 1, 1886,	723,374,962
	Frankfort,	Jan. 1, 1886,	481,658,688
	Cologne,	Jan. 1, 1886,	133,711,018
	Bremen,	Jan. 1, 1886,	165,311,706
	Leipsic,	Jan 1, 1886,	83,122,666
	Stuttgart,	Jan. 1, 1886,	72,212,128
	Breslau,	Jan. 1, 1886,	53,730,713
	Dresden,	Jan. 1, 1886,	20,765,904
	Total Germany,		$2,987,957,981
Italy,[5]	Milan,	Jan. 1, 1886,	$79,395,481
	Six other Italian clearing houses,	Jan. 1, 1886,	35,461,306
	Total Italy,		$114,856,787
Australia,[1]	Melbourne,	Jan. 1, 1886,	$813,057,891

[1] £ at $4.86, 6. [2] Franc at 19.3 cents. [3] Florin at 39.3 cents.
[4] Mark at 23.8 cents. [5] Lira at 19.3 cents.

CHAPTER IX.

RAILROADS.

The Development of the Locomotive and the Railway.—Statistics of United States Railroads.—Speed of Trains —Railroad Credits.—Street Railways of the World.—The Interstate and State Railroad Commissioners.

The Development of the Locomotive and the Railway.

The first railway locomotive was built by Richard Trevithick in England in 1804. Its performance at the first trial was to draw ten tons of bar iron, besides its fuel, water, and the necessary carriages, for a distance of nine miles at the rate of five and one-half miles per hour.

Amid absurd notions opposing the introduction of steam railroads the locomotive became a practical success, and at the opening of the Hexham and Newcastle road, in 1825, the number one engine was run, drawing six wagons of coal, a covered coach for directors, twenty-one coal wagons full of passengers, and after these six more loaded coal wagons.

The act for the building of the Stockton and Darlington Railway was passed in 1821, it being the intention of the company to use animal power. It was opened Sept. 28,

1825, with a locomotive engine driven by Stephenson himself, a signal-man riding on horseback in advance. The locomotive drew thirty-four cars, weighing in all ninety tons, at ten to twelve miles per hour, and at a maximum speed of fifteen miles upon favorable sections of the road. In 1827, this railway had four locomotives of six horse power each, and two stationary engines, to aid in passing two hills. Each engine drew, besides tender, fuel, and water, twenty-four iron wagons, each weighing twenty-three hundred weight and each carrying fifty-three hundred weight of coal, a total train weight of ninety-five tons, at a speed of four miles per hour.

The "Rocket," which won the prize at the competition trial on the 8th of October, 1829, with fifty pounds steam pressure to the square inch in the boiler, drew about thirteen tons weight at an average speed of fifteen miles per hour, the maximum being twenty-nine miles. Its success was due to the introduction of the tubular principle in the boiler, an improvement by which the much-needed heating surface was greatly increased.

Since this period scarcely any new principles of importance have been introduced in the locomotive.

In 1826, the year the Erie Canal was opened, the first railroad, or rather tram road, was built at Quincy, Mass. It was operated by horse power and stationary engines, and was used to haul granite for the building of Bunker Hill Monument. It extended from the granite quarries to the Neponset River, and was a little less than three miles long. It antedated the actual running of the first locomotive by about two years. Not until 1871 did it become a portion of an actual railroad.

The first railroad constructed for the transportation of passengers and freight was begun by the Baltimore and Ohio Company, July 4, 1828. The South Carolina

road was begun in 1830 and opened in 1833, for its whole length of 135 miles, being at that time the longest continuous line in the world. The Mohawk and Hudson, since a portion of the New York Central, was begun in 1830, 17 miles being opened in 1831. The Saratoga and Schenectady, 21½ miles, was opened in 1832.

In Massachusetts, the Boston and Worcester, 44 miles; the Boston and Providence, 41 miles; and the Boston and Lowell, 26 miles, were opened in 1835.

At the end of 1835 the total length of lines in the United States was 1,098 miles.

Railroads have been built in different countries, as follows: In France, tramways were used in 1826, and plans made for the development of a railroad system in 1833, but not practically carried out until 1857; Germany built its first line in 1835; Austria-Hungary chartered a line in 1824 and opened it in 1828, but railroads were not encouraged by the government until 1838; Holland opened its first railroad in 1840; India, in 1845; Spain, in 1848; Brazil, in 1850; Chili, 1850; Russia opened its first important railroad, that between St. Petersburg and Moscow, in 1851; Peru, in 1852; Portugal, in 1853; Canada opened its first line, the Grand Trunk, between Portland and Montreal, in 1853; Australia, in 1855; Colombia, the Panama railroad, in 1855; Egypt, in 1856; Italy, in 1860; Turkey, in 1860; Switzerland opened its first line, the St. Gothard, May 22, 1882; Mexico, the Mexican Railway, in 1865; and China, in 1876.

The Railroads of the World, Jan. 1, 1886.

Countries.		Miles.	Countries.		Miles.
1. North America.	United States('87),	137,615	4. Europe. Continued.	Portugal,	1,039
	Canada,	10,150		Roumania,	1,045
	Mexico,	3,703		Russia,	16,502
Total,	North America,	151,468		Servia,	239
2. Middle America.	Costa Rica,	110		Spain,	5,600
	Cuba (Spanish)	871		Sweden,	4,091
	Guatemala,	112		Switzerland,	1,879
	Honduras,	69		Turkey,	920
	Jamaica (British),	67	Total,	Europe,	123,526
	Nicaragua,	99	5. Asia,	Ceylon (British),	178
	Salvador,	54		China,	8
	Trinidad,	51		India (British),	12,376
Total,	Middle America,	1,433		Japan,	346
3. South America.	Argentine Repub.,	4,150		Java (Dutch),	3,498
	Bolivia,	81		Philippines (Spanish),	279
	Brazil,	3,800		Turkey in Asia,	250
	Chili,	1,414	Total,	Asia,	16,935
	Colombia, U.S of,	151	6. Africa	Algeria (French),	1,049
	Ecuador,	76		Cape Colony,	1,646
	Guiana (British),	21		Egypt,	1,276
	Paraguay,	45		Mauritius,	66
	Peru,	1,600		Namaqualand,	95
	Uruguay,	268		Natal (British),	116
	Venezuela,	102		Tunis,	258
Total,	South America,	11,708	Total,	Africa,	4,506
4. [Europe.	Austria-Hungary,	14,301	7. Australasia.	N. South Wales,	1,852
	Belgium,	2,711		New Zealand,	1,591
	Bulgaria,	140		Queensland,	1,407
	Denmark,	1,208		South Australia,	1,211
	Finland,	1,132		Tasmania,	257
	France,	20,144		Victoria,	1,680
	Germany,	26,287		West'n Australia,	124
	Great Britain and Ireland,	19,169	Total,	Australasia,	8,122
	Greece,	324			
	Italy,	6,167		Hawaii,	32
	Luxemburg,	249			
	Netherlands,	1,407			
	Norway,	972	Grand T'l,		317,698

Comparative Statistics of American Railways. 1871–1886.

[From Poor's Manual of the Railroads of the United States.]

Year.	Miles Operated.	Capital and Funded Debt. (Stock and Bonds.)	Earnings.				Dividends Paid.
			Gross.	Net.	From Freight.	From Passengers.	
		$	$	$	$	$	$
1871,	44,614	2,664,627,645	403,329,208	141,746,404	294,430,322	108,898,886	56,456,681
1872,	57,523	3,159,423,057	465,241,055	165,754,373	340,931,785	132,309,270	64,418,157
1873,	66,237	3,784,543,034	526,419,935	183,810,562	389,035,508	137,384,427	67,120,709
1874,	69,273	4,221,763,594	520,466,016	189,570,958	379,466,935	140,999,081	67,042,942
1875,	71,759	4,415,631,630	503,065,505	185,506,438	368,960,234	139,105,271	74,294,208
1876,	73,508	4,468,591,935	497,257,959	186,452,752	361,137,376	136,120,583	68,039,668
1877,	74,112	4,568,597,248	472,909,272	170,976,697	342,859,222	130,050,050	58,566,312
1878,	78,960	4,589,948,793	490,103,351	187,575,167	365,466,061	124,637,290	53,629,368
1879,	82,223	4,762,506,010	529,012,999	219,916,724	386,676,108	142,336,191	61,681,470
1880,	84,225	4,897,401,997	615,401,931	255,193,436	467,748,928	147,653,003	77,115,411
1881,	94,486	6,055,798,785	725,325,119	276,654,119	551,968,477	173,356,642	93,344,200
1882,	107,158	6,745,579,147	770,356,716	310,682,877	506,367,247	202,140,775	102,031,434
1883,	110,414	7,208,940,497	823,772,924	298,367,285	549,756,695	215,287,824	102,052,543
1884,	115,672	7,431,732,458	770,684,908	268,064,496	506,925,375	208,300,940	93,244,835
1885,	123,320	7,583,424,898	772,568,833	269,493,931	519,690,992	200,883,911	77,672,105

Summary Statistics of the United States Railways Jan. 1, 1886 — Averages.

For each 100 miles of railroad operated in the United States there are 21.03 locomotives; 14.02 passenger cars; 5.30 baggage, mail, and express cars; and 653 freight cars of all kinds.

The capital stock aggregates to each mile of completed road, $29,867.
Bonded debt to each mile of completed road, $29,453.
Total cost of construction and equipment, each mile, $55,059.
Gross earnings per mile of road in operation, $6,265.
Net earnings per mile of road in operation, $2,185.
Interest paid on bonds per mile of completed road, $1,406.73.
Dividends paid on stock per mile of completed road, $608.10.
Ratio of interest paid to total funded debt, 4.77 per cent.
Ratio of dividends to aggregate capital stock, 2.02 per cent.
Average fare per mile, 2.20 cents.
Average freight charge per ton, 1.05 cents per mile.
Total number of passengers transported in 1885, 351,427,088.
Total freight transported on all railroads in 1885, 437,040,099 tons.

STATEMENT SHOWING THE NUMBER OF MILES OF RAILROAD CONSTRUCTED EACH YEAR IN THE UNITED STATES, FROM 1830 TO THE CLOSE OF 1886.

YEAR.	Miles in Operation.	Annual Increase of Mileage.	YEAR.	Miles in Operation.	Annual Increase of Mileage.	YEAR.	Miles in Operation.	Annual Increase of Mileage.
1830, .	23	–	1849, .	7,365	1,369	1868, .	42,229	2,979
1831, .	95	72	1850, .	9,021	1,656	1869, .	46,844	4,615
1832, .	229	134	1851, .	10,982	1,961	1870, .	52,914	6,070
1833, .	380	151	1852, .	12,908	1,926	1871, .	60,293	7,379
1834, .	633	253	1853, .	15,360	2,452	1872, .	66,171	5,878
1835, .	1,098	465	1854, .	16,720	1,360	1873, .	70,268	4,097
1836, .	1,273	175	1855, .	18,374	1,654	1874, .	72,385	2,117
1837, .	1,497	224	1856, .	22,016	3,647	1875, .	74,096	1,711
1838, .	1,913	416	1857, .	24,503	2,647	1876, .	76,808	2,712
1839, .	2,802	389	1858, .	26,868	2,465	1877, .	79,088	2,280
1840, .	2,818	516	1859, .	28,789	1,821	1878, .	81,717	2,629
1841, .	3,535	717	1860, .	30,635	1,846	1879, .	86,463	4,746
1842, .	4,026	491	1861, .	31,286	651	1880, .	93,349	6,886
1843, .	4,185	159	1862, .	32,120	834	1881, .	103,145	9,796
1844, .	4,377	192	1863, .	33,170	1,050	1882, .	114,713	11,568
1845, .	4,633	256	1864, .	33,908	738	1883, .	121,454	6,741
1846, .	4,930	297	1865, .	35,085	1,177	1884, .	125,379	3,925
1847, .	5,598	668	1866, .	36,801	1,716	1885, .	128,510	3,131
1848, .	5,996	398	1867, .	39,250	2,449	1886, .	137,158	8,648

The mileage of new railroads built in this country in 1886 was 8,648 miles, as against 3,131 miles built in 1885. The construction of 1886 has only been exceeded by that of 1881 and 1882. The reports indicate that the construction of new roads during the year 1887 will amount to not less than 12,000 miles.

Speed of Railroad Trains.

American.

	Miles.	Time of Fastest Train.	Average Speed, including Stops, Miles, per Hour.
Boston to Albany, ...	202	6 hrs. 20 m.	31.9*
Boston to New York, ...	217	6 hrs.	36.2
New York to Albany, ...	143	3 hrs. 20 m.	42.9†
New York to Chicago (Penn.), . .	912	24 hrs.	38.
New York to Philadelphia, . . .	90	2 hrs. 5 m.	43.3
New York to Washington, . . .	227	5 hrs. 30 m.	42.8
Philadelphia to Chicago (Penn.), . .	822	21 hrs. 40 m.	37.8

English.

London to Sheffield (Great Northern),	162	3 hrs. 12 m.	50.6
London to Manchester (Gt. Northern),	203	4 hrs. 15 m.	47.8
London to Glasgow, ...	440	10 hrs. 20 m.	42.6

* Heavy grades to surmount.
† Practically level.

Comparing American with English fast express trains, 14 trains by the Pennsylvania Railroad have an average speed of 42.9 miles per hour, and 6 by the Bound Brook route, average 42½ miles. Between London and Manchester, 20 expresses average a speed of nearly 41 miles per hour. Between Liverpool and Manchester there are 52 trains daily at a greater speed, — 32 by the Manchester, Sheffield, and Lincoln Railway, 4 averaging 51½ miles, 28 averaging 45¾ miles, and 20 by the London and Northwestern, averaging 45 miles per hour.

Fastest Railroad Time made.

West Philadelphia to Jersey City, 1 mile in 50¼ seconds, 3 miles in 2 minutes 36¼ seconds, 5 miles in 4 minutes 50 seconds, Sept. 4, 1879 = 81 miles per hour.

Hamburg to Buffalo, N. Y., 10 miles in 8 minutes = 75 miles per hour; Peekskill to Sing Sing, N. Y., 10 miles in 9 minutes, Feb. 17, 1874.

Locomotive "Hamilton Davis" and six cars on New York Central Railroad, 14 miles in 11 minutes, 1855 = 76 miles per hour.

Special train conveying newspaper correspondents, 44 miles in 43 minutes and 30 seconds, the last 16¾ miles in 14 minutes, June 10, 1884, from Washington Junction to Washington, D. C. = 71 miles per hour.

Jersey City to San Francisco, Cal., in 83 hours 39 minutes 16 seconds, combination passenger, mail, and baggage car, and a Pullman hotel car, June 1 to 4, 1876, 3,176 miles = 38 miles per hour average.

Railroad Credits — What Railroad Bonds pay Investors.

The following table is made by first obtaining the net rate of income, from the average market price of the last six months, if the bonds are held until the date of payment. The average of different issues of bonds of the same company is next obtained, giving weight to each in proportion to the amount issued. The credit ratings will, of course, vary with the market fluctuations.

Boston and Albany,	3.63 per cent.
Boston and Maine,	3.63 "
Boston and Providence,	3.63 "
Old Colony,	3.63 "
Boston and Lowell,	3.88 "
Eastern,	3.88 "
Fitchburg,	3.88 "
Nashua and Lowell,	3.88 "
New York Central and Hudson River,	4.13 "
Chicago and Alton,	4.15 "
Chicago, Burlington, and Quincy,	4.24 "
Highland (Street),	4.25 "
Metropolitan (Street),	4.25 "
Maine Central,	4.30 "
Pennsylvania,	4.36 "
St. Paul and Duluth,	4.45 "
Baltimore and Ohio,	4.50 "
Lynn and Boston (Street),	4.50 "

Michigan Central,	4.51 per cent.
Milwaukee and St Paul,	4.61 "
Middlesex (Street),	4.62 "
Lake Shore and Michigan Southern,	4.67 "
Central Pacific,	4.73 "
Manhattan Elevated (Met. and N. Y. El.),	4.84 "
New York and New England,	4.88 "
Erie,	4.90 "
Missouri Pacific,	4.91 "
Atchison, Topeka, and Santa Fé,	5.01 "
Oregon Navigation,	5.10 "
Union Pacific system,	5.11 "
Atchison system,	5.13 "
Southern Pacific,	5.14 "
St. Louis, Cable, and Western,	5.15 "
St. Louis and San Francisco,	5.15 "
Denver and Rio Grande,	5.20 "
Northern Pacific,	5.23 "
Richmond and West Point Terminal system,	5 24 "
Norfolk and Western,	5.35 "
Rutland,	5.40 "
Wisconsin Central,	5 45 "
Kansas City, Fort Scott, and Gulf,	5.50 "
Mexican Central,	7.38 "
Wabash system,	8.09 "

Credit of Railroad Companies in Different Localities or Groups of States.

Approximate Highest Credit, shown by Lowest Rate of Net Income Yearly from their Bonds.

1. New England,	4.00 per cent.
2. Middle,	4.50 "
3. Central Northern,	4.59 "
4. Northwestern,	4.79 "
5. South Atlantic,	5.03 "
6. Southwestern,	5.16 "
7. Pacific,	5.17 "
8. Gulf and Mississippi Valley,	5.25 "

Urban Railways of the World.

UNDERGROUND, ELEVATED, SURFACE, CABLE, AND HORSE RAILWAY SYSTEMS.

Table showing the Passenger Transportation Facilities of Principal Cities.

	Size, Sq. Mile.	Year.	Population.	No. per House.	Present Population of City and Suburbs, estimated.	Principal Means of Transit.	Quickest Means.	Year opened.
London,	122	1885	4,120,000	8	4,250,000	Underground R'y, Busses, Hansoms	Met. Underground	1863
Berlin,	25	1885	1,315,297	50	1,400,000	Horse R'ys and El Viaduct.	El. Viaduct,	1882
Vienna,	–	1880	775,000	45	945,000	Horse R'ys,	Horse R'ys,	–
Paris,	30	1881	2,269,000	32	2,500,000	Horse R'ys and Omnibuses.	Horse R'ys,	–
New York,	25	1881	1,243,000	13½	2,250,000	Horse R'ys and El. R.R's.	Man. El.,	1872
Brooklyn,	–	1880	566,663	–		Horse R'ys and El. R R's.	Brooklyn El.	1875
Philadelphia,	–	1880	847,170	–	1,000,000	Horse R'ys,	Horse R'ys,	–
Boston,	27	1885	390,393	8½	600,000	Horse R.R's,	Horse R'ys,	–
Providence,	–	1885	118,070	–	125,000	Horse R'ys,	Horse R'ys,	–
Chicago,	–	1880	503,185	–	600,000	Cable and Horse R'ys,	Cable R'ys,	1882
S. Francisco,	–	1880	233,959	–	–	Cable R'ys,	Cable R'ys,	1881

Growth of Cities.

New York, 1870 to 1880,	Population increased	23½	per cent.
New York (including Jersey City and Brooklyn), 1870 to 1880,	" "	33¼	"
Brooklyn, 1870 to 1880,	" "	43	"
Philadelphia, 1870 to 1880,	" "	25¼	"
Chicago, 1860 to 1870,	" "	167	"
Chicago, 1870 to 1880,	" "	68	"
Boston, 1870 to 1880,	" "	45*	"
Baltimore, 1870 to 1880,	" "	24	"
San Francisco, 1870 to 1880,	" "	57	"
Kansas City, 1870 to 1880,	" "	73	"
Average of U. S., 1870 to 1880,	" "	30	"

* Largely by annexation.

After reaching a population of 500,000, the percentage of increase of population of cities decreases.

London Underground Traffic.

Year.	Number of Passengers.	Gross Receipts for Passengers, Goods, Minerals, and Tolls.
1863,	9,455,175	£101,707
1864,	11,721,889	116,489
1865,	15,763,907	141,513
1866,	21,273,104	210,242
1867,	23,405,282	233,180
1868,	27,708,011	284,243
1869,	36,893,791	374,083
1870,	39,160,849	385,372[1]
1871,	42,765,427	396,068[2]
1872,	44,392,440	401,390
1873,	43,533,973	408,382
1874,	44,118,225	411,550
1875,	48,302,324	448,364[3]
1876,	52,586,395	475,792[4]
1877,	56,175,753	490,828
1878,	58,807,038	494,873
1879,	60,747,553	506,204[5]
1880,	63,759,573	526,213[6]
1881,	67,621,670	551,776
1882,	69,357,183	556,999[7]
1883,	74,204,301	603,768[8]
1884,	75,926,262	603,751[9]
1885,	77,170,601	591,981[10]
1886,	80,474,550	616,269
Total,	1,145,325,276	£9,931,037

[1] District Railway opened to Blackfriars Bridge, . . May, 1870.
[2] District Railway opened to Mansion House, . . . July 3, 1871.
[3] Extension to Bishopsgate opened, ... July 12, 1875.
[4] Extension to Aldgate opened, ... Nov. 18, 1876.
[5] Extension Swiss Cottage to West Hampstead opened, . June 30, 1879.
And from West Hampstead to Willesden, . . . Nov. 24, 1879.
[6] Extension to Harrow opened, ... Aug. 2, 1880.
[7] Extension from Aldgate to Trinity Square opened, . . Sept. 25, 1882.
[8] St. John's Wood Railway, receipts included as from . Jan. 1, 1883.
[9] Inner Circle completion and extension to East London Railway opened, ... Oct. 6, 1884.
[10] Extension from Harrow to Pinner opened, ... May 25, 1885.

New York City Passenger Traffic as related to Growth of Population.

Year.	Population.	No. of Railways.		Passenger Traffic.	No. of Rides per Inhabitant.
1850, ...	515,547	2	1853	6,835,548	–
			1854	6,817,197	–
1855, ...	629,810	4	1855	18,488,459	31
			1856	23,153,050	–
			1857	22,190,431	37
			1858	27,900,388	–
			1859	32,888,794	43
1860, ...	813,669	6	1860	36,455,242	47
			1861	26,274,360	–
			1862	35,878,044	–
			1863	40,412,357	–
			1864	60,900,200	61
1865, ...	726,386	12	1865	82,054,516	83
			1866	88,953,016	93
			1867	100,541,562	112
			1868	105,816,695	–
			1869	114,349,123	–
1870, ...	942,292	12	1870	115,139,553	–
			1871	133,893,981	–
			1872	143,696,989	124
			1873	145,358,805	–
			1874	151,927,233	–
1875, ...	1,045,223	19	1875	166,918,173	–
			1876	168,413,971	–
			1877	163,936,298	133
			1878	170,189,502	–
			1879	187,983,792	–
1880, ...	1,206,299	23	1880	211,222,348	175
			1881	231,386,771	186
			1882	252,871,646	198
			1883	268,749,877	204
			1884	284,115,862	220
1885, ...	–	25	1885	297,116,690	213
			1886	325,149,075	232

New York City Passenger Travel.

	Number Passengers.		Per Cent. by each.	Increase.	Per Cent.
	1884-85.	1885-86.			
Elevated lines, . .	103,702,729	115,109,591	35.4	11,406,862	11.0
Surface lines, . .	191,319,523	210,039,484	64.6	18,712,961	9.8
Total, . . .	295,022,252	325,149,075	100.0	30,119,823	10.2

The total increase for the year ending Sept. 30, 1886, was 30,120,819, or 10.2 per cent., and the total movement, 890,800 passengers transported daily.

The following table shows the effect of increasing the facilities of travel upon the valuation of the city. Between 1876 and 1879 the elevated roads were scarcely started; between 1881 and 1884 the elevated roads had their full effect.

Year.	Valuation.	Increase.	Per Cent.
1876, ...	$892,428,165	-	-
1879, ...	918,134,380	$25,706,215	2.8
1881, ...	976,735,199	-	-
1884, ...	1,119,761,597	143,026,398	14.0

Fifteen East River ferry lines and 11 North River ferry lines carry 80,000,000 passengers annually.

The passenger traffic in and out of New York by railways and steamers is about 200,000,000 annually.

To provide increased facilities, an arcade railroad of four tracks, to be built through and under Broadway, is projected. The cost of six miles, extending from the Battery under Broadway to Central Park, is estimated at $18,000,000, or $3 000,000 per mile, including equipment of $300,000 per mile. The two middle tracks are designed for rapid transit, and the two outer for local traffic, all tracks connecting with the steam surface railroads leaving New York.

Elevated Railroads.

	New York.	Brooklyn.*
	1886.	1886.
Number of lines,	4	1
Length of line (miles),	32	7
Length of track (miles),	84	13
Number of engines,	266	30
Number of cars,	770	90
Passengers carried annually,	115,109,591	10,158,665
Number of rides per inhabitant,	92.6	17.9
Cost of roads (exclusive of equipment),	–	$9,689,195
Funded debt,	$24,318,000	4,750,000
Capital stock outstanding,	24,367,645	5,000,000
Earnings, amount,	7,352,982	518,481
Earnings, per mile of line,	233,132	76,812
Expenses, amount,	3,850,812	379,372
Expenses, percentage to gross earnings,	52.38	73.17
Net earnings,	$3,502,170	$139,108
Interest,	1,511,983	–
Dividends,	1,560,000	–
Rate of dividend, per cent,	6	–

* New road in process of building.

Brooklyn Bridge Traffic.

Year (ending Dec. 1).	No. of Passengers.		Receipts (Tolls).	
	Cable Railroad.	Total.	Railroad.	Total.
1885,	17,023,237	20,625,326	$537,435	$618,915
1886,	24,029,267	27,047,984	661,362	743,539
Total since bridge was opened, May 25, 1883,	50,626,190	65,427,896	$1,679,404	$2,035,220

The total cost of the bridge was $14,200,000.

Cable Roads.

Cable roads have an advantage over all other systems of transit, in ease and economy of operation upon heavy grades. The following are the maximum grades on the several cable railroads in the United States: —

Clay Street, San Francisco,	16 in 100.
California Street, San Francisco,	18 in 100.
Suter Street, San Francisco,	8.7 in 100.
Geary Street, San Francisco,	9.8 in 100.
State Street, Chicago,	About level
Ninth Street, Kansas City,	18.3 in 100.

The cable system of traction was first used in San Francisco, lines being constructed by Mr. A. S. Hallidie up the Clay Street hill in 1881.

Chicago, out of 57 miles of street railway track, has 10¼ miles of double track, or 20½ miles running upon the cable system, employing 240 cars and dummies.

At Kansas City, 3.3 miles of double-track line have been in operation since July 1, 1885. The maximum grade is 19 feet in 100. The maximum grade for horses is 7 feet in 100. The total cost, including equipment, is $750,000, or $227,273 per mile of line. In 1886 this line carried 5,626,945 passengers; receipts, $281,347; expenses, $137,643.

HORSE RAILROADS.

	Year.	Number Lines.	Length of		Number of		Passengers carried Annually.	Number Rides per Inhabitant.	Cost of Roads and Equipment.	Funded Debt.
			Line, Miles.	Track, Miles.	Horses.	Cars.				
New York, . . .	1885	19*	125	246	15,061	2,063	210,039,484†	169.0	$32,370,199	$16,288,665
Brooklyn, . . .	1885	15	121	237	7,448	1,855	100,630,621	177.8	13,814,838	5,111,820
Philadelphia, . . .	1885	20	–	490	7,724	1,397	101,979,656	104.6	10,018,860	3,599,500
Boston, ...	1886	5*	–	185	7,872	1,562	86,246,780	221.0	6,923,817	3,257,442
Providence, . . .	1885	1	–	52	1,235	249	13,360,377	111.3	1,127,268	–

* Principal lines. † 1885–86.

	Capital Stock Outstanding.	Total Securities Issued.	Earnings.		Expenses.		Net Earnings.	Interest.	Dividends.	Average Rate of Dividends, per Cent.
			Amount.	Per Mile of Line.	Amount.	Percentage to Gross Earnings.				
New York, . . .	$18,541,800	$35,625,309	$9,132,439	$73,060	$6,096,817	66.76	$3,127,752	$781,312	$1,610,734	8.41*a*
Brooklyn, . . .	6,670,000	13,380,148	4,956,279	40,961	3,836,725	77.42	1,118,544	377,814	433,691	8.64*b*
Philadelphia, . . .	17,285,991	21,974,724	6,175,543	14,599	3,508,314	56.81	2,435,522	–	–	–
Boston, ...	6,400,000	10,346,075	4,440,480	22,003	3,678,953	82.85	761,527	196,353	370,000	6.67*c*
Providence, . . .	1,250,000	1,355,000	701,941	13,499	580,862	82.76	121,079	–	–	–

a. Average of twelve dividend-paying lines. One line paid a dividend of 16 per cent.; five lines, of 10 per cent.; three, of 8, and one each of 6, 3, and 2 per cent.

b. Average of seven lines. Two lines paid 14 per cent. dividends each; three lines, 8; one, 5; and one, 3½ per cent.

c. Average of four lines. Three lines paid 8 per cent. each; one, 5 per cent.

The first horse railway in Europe was built at Birkenhead, England, and opened by George Francis Train, Aug. 30, 1860.

RAILROAD COMMISSIONS.

The Interstate Commerce Commission.

Judge THOMAS M. COOLEY, of Michigan, *Chairman.*
WILLIAM R. MORRISON, of Illinois.
WALTER L. BRAGG, of Alabama.
AUGUSTUS SCHOONMAKER, of New York.
ALDACE F. WALKER, of Vermont.
EDWARD A. MOSELY, of Boston, *Secretary.*

OFFICE: WASHINGTON, D. C.

STATE RAILROAD COMMISSIONERS.

STATES, DATE OF ESTABLISHMENT OF COMMISSIONS, LOCATION OF GENERAL OFFICE, AND HOW PAID.	Names of Commissioners, and of Secretary or Clerk.	How appointed.	Salaries.
Alabama — Established Feb. 26, 1881. Office, Montgomery. Paid by State	Henry R. Shorter, President,	Appointed by the Governor and Senate for two years.	$3,500
	Levi W. Lawler, Associate,		3,000
	W. C. Tunstall, Associate,		3,000
	Charles P. Jackson, Clerk,		1,500
Arkansas — Board of Tax Assessors. Office, Little Rock.	J. H. Berry, Governor of State,		3,500
	A. W. Files, Auditor of State,		2,250
	Jacob Frolich, Secretary of State,		1,800
California — Established April 15, 1880. Office, 14 Dupont St., San Francisco. Paid by State.	P. J. White, President,	Elected by the people for four years,	4,000
	A. Abbott, Commissioner,		4,000
	James W. Rea, Commissioner,		4,000
	Stafford H. Parker, Secretary,		2,400
Colorado — Established 1885. Office, Denver. Paid by State.	M. B. Garry, Commissioner,	Appointed by the Governor for two years.	3,600
Connecticut — Established 1853. Office, Hartford. Paid by Railroads.	George M. Woodruff, Commissioner,	Appointed by the Governor and Senate for three years.	3,000
	John W. Bacon, Commissioner,		3,000
	William H. Hayward, Commissioner,		3,000
	George T. Utley, Secretary,		1,800

Dakota — Office, Yankton,	Alexander Griggs,	. . . . .	–
	N. F. Smith,	. . . . .	–
	Abraham Boynton,	. . . . .	–
Georgia — Established Oct. 14, 1879. Office, Atlanta. Paid by State.	Campbell Wallace, Chairman,	Appointed by the Governor and Senate for six years.	2,500
	L. N. Trammell, Commissioner,		2,500
	A. S. Erwin, Commissioner,		2,500
	A. C. Briscoe, Secretary,		1,200
Illinois — Established July 1, 1871. Office, Springfield. Paid by State.	J. I. Rinaker, Chairman,	Appointed by the Governor and Senate for two years.	3,500
	Jason Rogers,		3,500
	B. F. Marsh,		3,500
	N. D. Munson, Secretary,		1,500
Indiana — Board for Assessing Taxes. Office, Indianapolis.	Isaac P. Gray, Governor of State,	Elected for four years,	5,000
	M. D. Manson, Lieutenant Governor,	Elected for four years,	$8 a day.
	William R. Myers, Secretary of State,	Elected for two years,	2,000
	James H. Rice, State Auditor,	Elected for two years,	1,500
	John J. Cooper, State Treasurer,	Elected for two years,	3,000
Iowa — Established April 1, 1878. Office, Des Moines. Paid by Railroads.	Peter A. Dey, Commissioner,	Appointed by the Governor and Executive Council for three years.	3,000
	Spencer Smith, Commissioner,		3,000
	L. S. Coffin, Commissioner,		3,000
	E. G Morgan, Secretary,		1,500
Kansas — Established April 1, 1883. Office, Topeka. Paid by Railroads.	A. R. Green, Commissioner,	Elected by Executive Council,	3,000
	Almeron Gillett, Commissioner,		3,000
	James Humphrey, Commissioner,		3,000
	H. C. Rizer, Secretary,		1,500
Kentucky — Established April 2, 1880. Office, Frankfort. Paid by State.	D. Howard Smith, Commissioner,	Appointed by the Governor for two years.	2,000
	W. B. Machen, Commissioner,		2,000
	W. M Buckner, Commissioner,		2,000
	C. E. Kincaid, Clerk,		300
Maine — Established 1858. Office, Augusta. Paid by Railroads.	Asa E. Wildes, Commissioner,	Appointed by the Governor and Council for three years.	$5 a day.
	John F. Anderson, Commissioner,		"
	David N. Mortland, Commissioner,		"
Massachusetts — Established June 15, 1869. Office, Boston. Paid by Railroads.	George G Crocker, Chairman,	Appointed by the Governor and Council for three years.	4,000
	Edward W. Kinsley, Commissioner,		3,500
	Everett A. Stevens, Commissioner,		3,500
	William A. Crafts, Secretary,		2,000
	Fred. E. Jones, Accountant,		2,000
Michigan — Established April 10, 1873. Office, Lansing. Paid by State.	John T. Rich, Commissioner,	Appointed by Governor and Senate for two years.	2,500
	Wyllys C. Ransom, Deputy,		1,500

State Railroad Commissions — *Concluded.*

States, Date of Establishment of Commissions, Location of General Office, and how paid.	Names of Commissioners, and of Secretary or Clerk.	How appointed.	Salaries.
Minnesota — Established March 8, 1875. Office, St. Paul. Paid by State.	Horace Austin, Commissioner,	Elected for three years,	3,000
	John L. Gibbs, Commissioner,	Elected for two years,	3,000
	G. L. Becker, Commissioner,		3,000
	E. S. Warner, Secretary,		1,200
Mississippi — Established March, 1884. Office, Jackson. Paid by State.	J. F. Sessions, Chairman,	Appointed by Governor and Senate for two years.	2,500
	William McWilde, Commissioner,		2,500
	J. C. Kyle, Commissioner,		2,500
	S. F. Scruggs, Secretary,		–
Missouri — Established March 29, 1875. Office, Jefferson. Paid by State.	James Harding, Commissioner,	Elected by people for six years,	3,000
	William G. Downing, Commissioner,		3,000
	John B. Breathitt, Commissioner,		3,000
	H. H. Gregg, Secretary,		1,500
Nebraska — The railroad commission of this State consists of Secretary of State, State Auditor, and Attorney General. The following secretaries are appointed, one to represent each congressional district.	C. H. Gere, Secretary,		–
	B. R. Cowdrey, Secretary,		–
	W. H. Bushow, Secretary,		–
	H. M. Waring, Bookkeeper and Stenog.,		–
New Jersey — State Board of Assessors. Established 1884. Office, Trenton. Paid by State.	Edward Bettle, Assessor,	Appointed by Governor for four years.	2,500
	Abraham M. Reynolds, Assessor,		2,500
	Alexander G. Cattell, Assessor,		2,500
	Charles A. O'Neill, Assessor,		1,800
	John T. Van Cleef, Secretary,		–
	E. J. Anderson, State Comptroller,		4,000
New Hampshire — Established in 1884. Office, Concord. Paid by Railroads.	Henry M. Putney, Chairman,	Chosen by the people of towns for two years.	2,500
	E. J. Tenney, Secretary,		2,200
	E. B. Sanborn, Clerk,		2,000

New York—Established Jan. 1883. Office, Albany. Paid by State.	William E Rogers, Commissioner,		8,000
	John D. Kernan, Commissioner,		8,000
	Isaac V. Baker, Commissioner,		8,000
	William C. Hudson, Secretary,	Appointed by the Governor and Senate.	3,000
	H. M. Thompson, Accountant,		3,000
	Thos. W. Spencer, Inspector of R.R.'s,		3,000
	Thomas B O'Neill, Marshal,		1,500
	E. C. McEntee, Stenographer,		600
Ohio—Established April 5, 1867. Office, Columbus. Paid by State.	W. S. Cappeller, Commissioner,	Appointed by Governor and Senate for two years.	2,000
	W. S Tozzer, Examiner of Bridges,		1,200
	Richard J. Fanning, Chief Clerk,		1,200
Pennsylvania—Department Internal Affairs. Office, Harrisburg.	J. Simpson Africa, Sec. Internal Affairs,	Elected by people for four years,	3,000
Rhode Island—Established 1872. Office, Providence. Paid by State.	J. W. Greenland, Department Secretary,		–
	Walter R Stiness, Commissioner,	Appointed by the Governor for one year.	1,500
South Carolina—Established Dec. 24, 1878. Office, Columbia. Paid by Railroads.	M L. Bonham, Commissioner,	Appointed by the Governor and Senate for six years.	2,100
	E P. Jervey, Commissioner,		2,100
	D'Arcey P Duncan, Commissioner,		2,100
	M T. Bartlett, Secretary.		1,200
Texas—State Engineer. Office, Austin.	James H. Britton, State Engineer,	Elected for two years.	3,000
	Charles Meyer, Secretary,		–
Vermont—Established 1855 Office, Woodstock. Paid by State.	Samuel E Pingree, Chairman,	Appointed by Governor and Senate for two years.	–
	Truman C. Fletcher, Commissioner,		–
	Henry L Clark, Commissioner,		–
	Alfred E. Watson, Clerk,		–
Virginia—Established March 31, 1877. Office, Richmond. Paid by Railroads.	James B. Hill, Jr, Commissioner,	Appointed by General Assembly for two years.	3,000
	M G. Menefee, Clerk,		1,200
Wisconsin—Established March 11, 1874. Paid by State. Office, Madison.	Atley Peterson,	Appointed by Governor and Senate for two years.	3,000
	James H. Foster, Secretary,		1,500

CHAPTER X.

FOREIGN EXCHANGE AND COMMERCE.

Sterling Exchange: Its Origin, and Intrinsic and Commercial Basis. — Parity of Exchange and the Gold Shipping Points. — Highest and Lowest Quotations and Review of the Market for Ten Years.

Imports, Exports and Balance of Trade, 1861–1887.

Shipbuilding, Tonnage, and Carrying Trade of the United States, 1882–1887. — Remarks on American Shipping and Early Steam Vessels. — The Principal Ocean Steamers. — Rapid Transatlantic Passages. — Distances by Water from New York to Principal Ports of the World. — Amount of Coal consumed by Ocean Steamers. — Designating Marks of Transatlantic Lines.

Sterling Exchange.

A bill of exchange may be briefly defined as an order authorizing the transfer of money from a debtor to a creditor in a distant city or country. Such papers were in use to some extent among the Greeks and Romans long before the Christian era. The modern bills of exchange are said to have originated at the great public fairs held in Italy during the twelfth and thirteenth centuries, which rose to importance on account of the travel caused by the Crusades. At first bills were drawn only from one fair to another, but as commerce expanded they became common in all international dealings. Sicilian merchants drew on English debtors in 1255. The oldest copy of a bill extant is dated Milan, March 9, 1325, and is substantially in the modern form. In England, reference was made to drawing of foreign

bills in a statute of 1381; and in 1394 the magistrates of Barcelona, Spain, enacted that bills should be accepted within twenty-four hours after presentation, which shows that they formed part of the ordinary routine of business.

The basis of exchange, of course, is a comparison of the intrinsic value of the coinage of two countries, and its reduction to a common standard in currency. In the early history of the United States, the pound sterling was valued at $4 44⅑, based on the bullion standard of the then current Spanish dollar, which was worth almost exactly 4*s.* 6*d.* English. From 1792 to 1834, our gold coinage was of the same standard as the pound sterling, or 22 carats; making the dollar, at its legal weight of 27 grains, worth 97⅓ cents, and the pound sterling about $4.56½. In 1834, our bullion standard was so reduced that the dollar was intrinsically worth only 91¼ cents, and the pound sterling about $4.87. The custom-house valuation of the sovereign, however, was then fixed at $4.84, and so remained until Jan. 1, 1874, when it was fixed by act of Congress at 4.86\frac{65}{100}$, the current standard. The London Stock Exchange, early in the same year, valued the dollar at 4*s.*, or about 97⅓ cents. This valuation, being 2⅔ cents below par, equals a quotable premium of 2¾ per cent.; for instance, American securities worth par are quoted in London at 102¾.

Sterling exchange is said to be at *par* when trade between the United States and England is so nearly balanced that there is no special demand for bills on either side, and the rate for sight bills is within a fraction of 4.86\frac{65}{100}$. The rate is lowered in London if the balance turns in favor of England, and correspondingly increased in New York. The fluctuations are further affected by the supply of bills in either market, or by daily transactions in American securities on the London Exchange.

While 4.8665 is the parity or par of exchange, and the total cost of importing or exporting gold does not as a rule exceed two cents per pound, the export point is usually considered 4.88½ (sight bills), and the import point 483 (sight bills). The reason that the export point is so much nearer the parity of exchange lies in the interest question. The expense of ten days' interest at the Bank of England rate and of ten days at the American rate must be added to the expense of gold importations. All gold shipments must bear charges for freight, insurance, and abrasion by friction.

The lower rate for time bills simply represents a discount to the debtor for the use of the money, as he pays cash for the 30, 60, or 90 day bill.

The increasing use of cable transfers has materially reduced the volume of bills in some places during the past few years, as no paper appears in the transaction. An exporter simply ships his produce, telegraphs the fact to his London consignee, and if he chooses, sells the cargo at once "to arrive." The proceeds are remitted through a London banker.

A "banker's bill" is simply a bill drawn between one banking house and another, in two different countries. "Commercial bills" are drawn and sold by the exporter on either side against shipments of merchandise. They are usually drawn at 30, 60, or 90 days' sight, and are bought by the banking houses against their own bills of exchange. A large supply of commercial bills naturally lowers the rate of exchange.

The following table shows the highest and lowest quotations for sight and 60 day sterling bills for the ten years ending Jan. 1, 1887, and the imports and exports of specie during the same period: —

	Highest.		Lowest.		Imports, Specie.	Exports, Specie.
	60 Day.	Sight.	60 Day.	Sight.		
1877, . . .	4.88	4.90⅛	4.80½	4.84	$40,774,414	$43,134,738
1878, . . .	4.88½	4.90½	4.78½	4.84	29,821,314	27,054,985
1879, . . .	4.88½	4.90	4.80½	4.83½	20,293,000	17,554,235
1880, . . .	4.87	4.90	4.79	4.81½	93,034,310	9,347,893
1881, . . .	4.85	4.87	4.79	4.81½	110,575,497	14,226,944
1882, . . .	4.87½	4.90½	4.80	4.84	42,472,390	43,480,271
1883, . . .	4.86½	4.90	4.81	4.83½	28,489,391	21,623,181
1884, . . .	4.88½	4.90¼	4.80	4.84	37,426,262	50,225,635
1885, . . .	4.88	4.90	4.81½	4.85½	43,242,323	24,376,110
1886, . . .	4.88½	4.90	4.80	4.84	38,593,656	51,924,117

Review of the Exchange Market, 1877–1887.

A brief review of the exchange market during the same period will illustrate the facts given above and explain the fluctuations. In 1877, exchange was steady during the early part of the year, but after the large crops began to come in and exports of produce became large, prices declined and ruled low throughout the year. But for the return of United States bonds from abroad more specie would have been imported. Heavy exports of produce influenced exchange during the whole of 1878. The homeward movement of governments continued for the first six months, causing a considerable demand for bills, which supported prices. For the balance of the year rates ruled lower. The return of bonds continued through the early part of 1879; rates were high, and groundless fears of large exports of specie were entertained. After July, exchange rates fell off to the importing point of specie, and held there until the end of the year. Early in 1880, heavy importations of foreign goods strengthened exchange, but after the first six months these declined, and rates fell below the specie importing point. Rates were unusually low at the opening of 1880, and after some fluctuation low prices ruled through the year. In 1882, much foreign merchandise was imported, and on the other hand there was a comparatively small surplus of the crop of 1881 for

export, causing large shipments of gold abroad during the first six months. During October, November, and December, however, cotton shipments restored the balance to this side, and moderate amounts of specie were imported. During the first half of 1883 imports fell off materially, while the exports showed a large increase as compared with the same time in 1882. In consequence, the balance in favor of this country was $100,000,000 larger than the previous year. After three months of strong rates for exchange, the usual July decline came, admitting of a moderate importation of gold. Early in 1884 exchange was very firm, owing to the return of American securities and to the small crops of 1883, which left but a small surplus for export after January 1. This situation resulted in exports of gold to the amount of $32,000,000 up to the end of April, but the movement was checked by the May panic. After July 1, imports of goods fell off, and there was a better feeling on Americans abroad. There was also a heavy autumn movement of cotton. Rates declined sharply in June and July, and moderate imports of gold followed. In September and October they again reached the gold importing point, but the advance of the Bank of England rate to five per cent. checked the shipments, and the rates permitted of no more during the year. Early in 1885 there was an investment demand for bills by persons who wished to take advantage of the higher money market in London; and soon afterward the prospect of war between England and Russia strengthened exchange. After several months of unimportant fluctuations the August decline set in, and small amounts of gold were imported. The autumn exports of grain and cotton were light; but a demand for American securities kept exchange fairly steady. During December a sharp demand for short bills put up prices, and a small amount of gold was shipped abroad; but the market immediately

weakened. For the first six months of 1886 imports were large, the demand for American securities abroad was light, and the exports low in value; so that exchange ruled high, and over $34,000,000 of specie were exported. But during the balance of the year grain and cotton exports were heavy, American stocks and bonds found a good market abroad, and there were large imports of specie.

Foreign Commerce of the United States.

[Fiscal years ending June 30, and seven months of fiscal year 1887. 000,000 omitted.]

The phrases "net imports" and "domestic exports" indicate that all merchandise and specie imported and re-exported are excluded from the table. The column headed "Balance of Trade" shows the difference between the net imports and domestic exports of merchandise without reference to the movement of specie. A + mark before the amount indicates that the balance of trade was in favor of the United States; when no mark occurs, the balance of trade is against this country.

Fiscal Years.	Merchandise. (Gold Value.)		Balance of Trade.	Specie.		Specie Balance.
	Net Imports.	Domestic Exports.		Net Imports.	Domestic Exports.	
1861, . . .	$274	$204	$69	$40	$23	+$16
1862, . . .	178	179	+1	10	31	20
1863, . . .	225	186	39	1	55	54
1864, . . .	301	143	157	8	100	92
1865, . . .	209	136	72	6	64	57
1866, . . .	423	337	85	7	82	75
1867, . . .	381	279	101	16	54	38
1868, . . .	344	269	75	4	83	79
1869, . . .	406	275	131	5	42	37
1870, . . .	419	376	43	12	43	31
1871, . . .	505	428	77	7	84	77
1872, . . .	610	428	182	6	72	66
1873, . . .	624	505	119	10	73	63
1874, . . .	550	569	+18	21	59	38
1875, . . .	518	499	19	12	83	71
1876, . . .	445	525	+79	9	50	40
1877, . . .	438	589	+151	27	43	15
1878, . . .	422	680	+257	23	27	3
1879, . . .	433	698	+264	12	17	4
1880, . . .	656	823	+167	85	9	+75
1881, . . .	624	883	+259	105	14	+91
1882, . . .	707	733	+25	36	43	6
1883, . . .	703	804	+100	18	21	3
1884, . . .	652	724	+72	20	50	29
1885, . . .	562	726	+164	25	24	+1
1886, . . .	621	665	+44	18	51	33
1887,* . . .	470	505	+35	54	33	+21

* Nine months ending March 31, 1887.

Note.—The Canadian reports of imports into the Dominion of Canada from the United States indicate that in addition to the above "Domestic Exports" there was exported in the fiscal year 1886 merchandise of the value of $17,027,875.

Shipbuilding, Tonnage, and Carrying Trade of the United States for Five Years.

	1886.	1885.	1884.	1883.	1882.
Number of sea-going vessels,	6,102	6,284	–	6,214	–
Tonnage,	2,060,258	2,138,880	–	2,099,218	–
Vessels built,	715	920	1,190	1,268	1,371
Tonnage,	95,453	159,056	225,314	265,429	282,269
Tonnage registered for foreign trade,	1,088,647	1,262,814	1,276,972	1,269,681	1,259,492
Percentage of American foreign trade carried in American vessels,	16.	17.	17.5	16.3	15.9
Total vessels of the U. S.,	23,534	–	–	–	–
Total tonnage,	4,131,136	4,265,934	4,271,229	–	–

Iron and Steel Shipbuilding.

Number of sailing vessels,	3	1	3	1	–
Gross tonnage,	692	731	4,432	2,033	–
Number of steamers,	23	47	31	34	43
Gross tonnage,	14,215	43,297	31,200	37,613	40,097
Total number,	26	48	34	35	43
Total tonnage,	14,907	44,028	35,632	39,646	40,097

Shipping Admeasurement.

Register ton. For register tonnage or for measurement of the entire internal capacity of a vessel:

100 cubic feet = 1 register ton.

This number is arbitrarily assumed to facilitate computation.

Shipping ton. For the measurement of cargo:

40 cubic feet = { 1 United States shipping ton. / 31.16 imported bushels. / 32.143 United States bushels.

42 cubic feet = { 1 British shipping ton. / 32.719 imported bushels. / 33.75 United States bushels.

Early Steam Vessels.

The United States is the second maritime nation. Our commercial fleet is about one-half that of Great Britain, but greater than those of France, Germany, Norway, and Italy combined. It has four times the carrying capacity of France and Germany respectively. American vessels had nearly twenty per cent. of the world's carrying trade in 1880; France and Germany about five per cent. each.

The first commercially successful steamboat was Robert Fulton's *Clermont*, launched in 1807 on the Hudson River. The first on the Mississippi, the *Orleans*, was built by Fulton in 1811. In 1812, Henry Bell of Scotland built the first British steamer, the *Comet* (30 tons), which plied between Greenock and Glasgow. In 1819 the *Savannah* (310 tons) crossed the Atlantic from America, and returned after a long cruise in the Baltic.

The first British steamer to cross the Atlantic was the *Great Western* (1,340 tons), in 1838. The *Sirius*, a few weeks later, made the passage in eighteen days, probably being detained by rough weather. Two years later the Cunard Line was established.

THE PRINCIPAL OCEAN STEAMERS.

Their Tonnage, Dimensions, Power of Engines, etc., for 1886.

British.

Name.	Line.	Built.	Iron or Steel.	Length, Feet.	Breadth.	Depth of Hold.	Registered Tonnage.		Horse-power of Engines.	Plying between —
							Gross.	Net.		
Great Eastern,	. . . . .	1859,	I.	679.6	82.8	31.6	18,915	13,344	2,600	Idle.
City of Rome,	Anchor, . . .	1881,	I.	560.2	52.3	37.0	8,414	3,453	1,500	Gt. Britain and N. Y.
Etruria, . .	Cunard, . . .	1885,	S.	501.6	57.2	38.2	8,144	3,245	2,500	Gt. Britain and N. Y.
Umbria, . .	Cunard, . . .	1884,	S.	501.6	57.2	38.2	7,718	3,245	2,500	Gt. Britain and N. Y.
Servia, . .	Cunard, . . .	1881,	S.	515.	52.1	37.0	7,392	3,971	1,000	Gt. Britain and N. Y.
Aurania, . .	Cunard, . . .	1883,	S.	470.	57.2	37.2	7,269	4,030	1,500	Gt. Britain and N. Y.
Alaska, . .	Guion, ...	1881,	I.	500.	50.	38.	6,932	3,554	1,800	Gt. Britain and N. Y.
Orizaba, . .	Pacific Steamship Co.,	1886,	S.	416.	49.3	35.3	6,184	3,587	1,200	– –
Oroya, . .	Pacific Steamship Co.,	1887,	S.	460.	49.3	35.3	6,184	3,570	1,200	– –
Austral, . .	Anchor, . . .	1882,	S.	456.	48.2	39.3	5,588	3,289	1,000	Gt. Britain and N. Y.
Germanic, . .	White Star, . . .	1875,	I.	455.	45.2	33.7	5,008	3,150	760	Gt. Britain and N. Y.
Britannic, . .	White Star, . . .	1874,	I.	455.	45.2	33.7	5,004	3,152	760	Gt. Britain and N. Y.
Arizona, . .	Guion, ...	1879,	I.	450.2	45.4	35.7	5,164	2,657	1,200	Gt. Britain and N. Y.
Orient, . .	Oriental S. N. Co.,	1879,	I.	445.6	46.3	35.1	5,386	3,440	1,000	Gt. Britain & Australia.
Furnessia, . .	Anchor, . . .	1880,	I.	445.1	44.8	34.5	5,495	3,613	600	Gt. Britain and N. Y.
America, . .	National, . . .	1883,	S.	441.8	52.1	36.	5,528	2,834	1,064	Gt. Britain and N. Y.
Parisian, . .	Allan, ...	1881,	S.	440.8	46.2	33.2	5,359	3,440	800	Gt. Britain and Canada.
Tainui, . .	S. S. & N. Co., London,	1885,	S.	439.6	46.4	21.4	5,031	3,231	800	Pacific Ocean.
Arawa, . .	S. S. & N. Co., London,	1884,	S.	439.6	46.3	28.9	5,026	3,268	800	Tramp.
Kansas, . .	Warren, . . .	1882,	I.	436.5	43.8	35.6	5,276	3,455	600	Gt. Britain and Boston.
Cephalonia, . .	Cunard, . . .	1882,	I.	430.6	46.5	34.5	5,517	3,490	700	Gt. Britain and Boston.
Pavonia, . .	Cunard, . . .	1882,	I.	430.5	46.4	34.9	5.588	3,490	700	Gt. Britain and Boston.
City of Chicago, .	Inman, ...	1883,	I.	430.6	45.	33.6	5,202	3,383	900	Gt. Britain and N Y.
City of Berlin, .	Inman, ...	1875,	I.	488.6	44.2	34.9	5,491	2,957	850	Gt. Britain and N. Y.
Carthage, . .	P. & O. S. N. Co.,	1881,	I.	430.1	44.4	33.5	5,013	2,588	1,000	Gt. Britain & Australia.
Rome, . . .	P. & O. S. N. Co.,	1881,	I.	430.1	44.4	33.5	5,013	2,588	1,000	Gt Britain & Australia.

Bittern,	Sold to Italy,	1883,	I.	382.7	44.4	33.3	5,146	3,332	600	–	–
Jumna,	Brit. Ind. Asso. St'mrs,	1886,	S.	410.5	48.2	30.5	5,197	3,377	522	–	–
Vancouver,	M. & D. S. S. Co.,	1884,	I.	430.6	45.	33.6	5,217	3,389	1,000	–	–

European.

La Bourgogne,	French,	1885,	–	508.	–	–	7,000	–	–	Havre and N. Y.
La Champagne,	French,	1885,	–	508.	–	–	7,000	–	–	Havre and N. Y.
La Gascogne,	French,	1885,	–	–	–	–	7,000	–	–	Havre and N. Y.
La Normandie,	French,	1882,	–	459.	–	–	6,062	–	1,000	Havre and N. Y.
Ems,	North German,	1884,	–	427.	–	–	5,129	–	1,200	N. Y. and Bremen.
Eider,	North German,	1883,	–	430.	–	–	5,129	–	1,200	N. Y. and Bremen.
Fulda,	North German,	1882,	–	430.	–	–	5,109	–	1,200	N. Y. and Bremen.
Saale,	North German,	1885,	–	455.	–	–	5,500	–	–	N. Y. and Bremen.
Werra,	North German,	1882,	–	430.	–	–	5,109	–	1,200	N. Y. and Bremen.
Noordland,	Red Star,	1883,	–	400.	–	–	5,212	–	500	N. Y. and Antwerp.
Westernland,	Red Star,	1883,	–	440.	–	–	5,736	–	700	N. Y. and Antwerp.
Aller,	North German,	1885,	–	455.	–	–	5,500	–	–	Bremen and N. Y.
Trave,	North German,	1885,	–	455.	–	–	5,500	–	–	Bremen and N. Y.

American.

City of Pekin,	Pacific Mail,	1874,	–	408.	47.	19.5	5,079	3,128	–	San Francisco to Yoko. and Hong Kong.

Rapid Transatlantic Passages.

Date.	Steamer.	From—	To—	Time.			Line.
				Days.	Hours.	Minutes.	
Aug.– Sept., '86,	Aller, . .	Southampt'n,	New York, .	7	16	50	No. German
Aug., '86,	Trave, . .	New York, .	Southampt'n,	7	14	25	No. German.
June, '86,	La Bourgogne,	Havre, . .	New York, .	7	13	–	French.
Aug., '86,	La Champagne,	New York, .	Havre, . .	7	12	–	French.
'83,	Alaska, . .	Queenstown,	New York, .	6	21	45	Guion.
'83,	Alaska, . .	New York, .	Queenstown,	6	21	–	Guion.
Aug., '85,	City of Rome, .	Queenstown,	New York, .	6	18	–	Anchor.
Oct., '84,	Alaska, . .	New York, .	Queenstown,	6	16	38	Guion.
June, '84,	America, . .	New York, .	Queenstown,	6	13	4	National.
July, '85,	Etruria, . .	Queenstown,	New York, .	6	9	–	Cunard.
'85,	Etruria, . .	Queenstown,	New York, .	6	5	44	Cunard.
Aug. '85,	Etruria, . .	New York, .	Queenstown,	6	5	30	Cunard.
May, '87,	Umbria, . .	New York, .	Queenstown,	6	5	30	Cunard.
June, '87,	Umbria, . .	Queenstown,	New York, .	6	4	12	Cunard.

Average Amount and Cost of Coal Burned by Ocean Steamships, and Average Speed.

The larger and swifter ocean-going steamships often exceed a daily expense of $2,000 for coal alone, as may be seen by the following table: —

Name.	Line.	Coal Consumed per Day, Tons.	Average Knots per Hour.	Cost of Coal per Voyage.
Oregon (lost), . . .	Cunard, .	337	17 9-10	$18,872
City of Rome, . . .	Anchor, .	304	16	17,024
Etruria, ...	Cunard, .	300	18	17,000
Umbria, ...	Cunard, .	300	18 1-10	17,000
Alaska, ...	Guion, .	253	16 8-10	15,168
Servia, ...	Cunard, .	214	16 5-10	11,956
Aurania, ...	Cunard, .	214	16 7-10	11,056
America, ...	National, .	182	17 3-10	10,192
Austral, ...	Anchor, .	115	16 3-10	6,440
Britannia (1st steamer, 1840),	Cunard, .	44	8	–

The round trip expenses run from $40,000 to $70,000

Designating Marks of Ocean Steamship Lines.

Lines.	Funnel Marks.
American,	Lower two-thirds red, with white keystone, black top.
Anchor,	Black.
Allan,	Red with white ring under black top.
Cunard,	Red with black top.
French,	Red with black top.
Furness,	Black.
Guion,	Lower two-thirds black, a red band and black top.
Leyland,	Pink with black top. Funnel curved at the top.
Hansa,	Yellow with white band and white Maltese cross with red centre.
Hamburg,	Black.
Inman,	Lower two-thirds black, white band and black top.
Monarch,	French-gray and black top.
National,	White with black top.
N. German Lloyd,	Black.
Red Star,	Cream color, with black top with red star.
Royal Netherlands,	Black, with band having green border.
State,	Lower two-thirds buff, red band under black top.
White Star,	Cream, black top.
Warren,	Black.

Distances by Water from New York to Foreign Ports.

Port.	Country.	Miles.
Alexandria,	Egypt,	5,095
Amsterdam,	Holland,	3,530
Bermudas,	West Indies,	680
Bombay,	India,	11,555
Bordeaux,	France,	3,334
Brussels,	Belgium,	3,418
Cape of Good Hope,	Africa,	6,840
Cape Horn,	South America,	7,000
Constantinople,	Turkey,	5,154
Copenhagen,	Denmark,	3,650
Calcutta,	India,	12,510
Canton,	China,	14,105
Gibraltar,	Spain,	3,290
Glasgow,	Scotland,	2,934
Halifax,	Nova Scotia,	563
Havana,	Cuba,	1,275
Lima,	Peru,	11,312
Lisbon,	Portugal,	3,184
London,	England,	3,376
Liverpool,	England,	3,080
Madras,	British India,	11,840
Naples,	Italy,	4,327
Pekin,	China,	15,325
Pernambuco,	Brazil,	4,926
St. John,	Newfoundland,	785
St. Petersburg,	Russia,	4,431
Honolulu,	Sandwich Islands,	7,150
San Francisco,	California,	18,843
Shanghai,	China,	14,510
Stockholm,	Sweden,	4,075
Valparaiso,	Chili,	4,813
Vera Cruz,	Mexico,	2,185
Vienna,	Austria,	4,195
Yokohama,	Japan,	7,523

CHAPTER XI.

LAND AND AGRICULTURE.

Acquisitions and Total Area of the Territory of the United States. — Areas of the States in Square Miles.

Grants of Public Lands by Congress to States and Railroads.

Farms of the United States. — Total Acreage, Improved and Unimproved.

Immigration. — Total Arrivals, 1820 to 1887. — Arrivals by Countries. — Proportion of Total European Emigrants received by United States.

Agricultural Products. — Total Production of Staples for Five Years. — Highest and Lowest Chicago Wheat and Corn Prices, 1877–87. — Wheat Crops of the World.

Cotton. — Total United States Crops. — Exports and Consumption, 1841-87. — Cotton Prices, 1826 to 1887, by Years. — Consumption of the World. — Manufacture in the United States.

Wool. — Product of the United States, 1882–86.

Area of the United States.

The territory of the United States was acquired by cession, purchase or discovery as shown in the following table, which also gives amounts paid for, and several and total areas of, the successive additions: —

From.	How Acquired.	Date of Acquisition.	Amount Paid.	Area Square Miles.
1. Great Britain,	Cession, . . .	Sept. 3, 1783,	–	819,315
2. France, . .	Cession and purchase,	Apr. 30, 1803,	$15,000,000	877,268
3. Oregon, . .	Discovery, . . .	1805,	–	222,948
4. Spain, . .	Cession and purchase,	Feb. 22, 1819,	6,500,000	54,240
5. Texas, . .	Cession and purchase,	Mar. 2, 1845,	10,000,000	262,290
6. Great Britain (Wash. Ty.),	Cession, . . .	1846,	–	58,880
7. Mexico, . .	Cession and purchase,	Feb. 2, 1848,	15,000,000	614,439
8. Mexico, . .	Cession and purchase,	Dec. 30, 1853,	10,000,000	47,330
9. Russia, . .	Cession and purchase,	Mar. 30, 1867,	7,200,000	531,409
Total area, .	. . . . .	. . .	. . .	3,488,620
Another estimate makes the total area				3,501,409

The amount paid to Texas was in consideration of her cession to the United States of territory not included in her present limits. Payment was in bonds, which were applied to the liquidation of her public debt.

Areas of the States and Territories in Square Miles, 1880.

State or Territory.	Square Miles.	State or Territory.	Square Miles.
Alabama,	51,540	Missouri,	68,735
Alaska,	531,409	Montana,	145,310
Arizona,	112,920	Nebraska,	76,185
Arkansas,	53,045	Nevada,	109,740
California,	155,980	New Hampshire,	9,005
Colorado,	103,645	New Jersey,	7,455
Connecticut,	4,845	New Mexico,	122,460
Dakota,	147,700	New York,	47,620
Delaware,	1,960	North Carolina,	48,580
District of Columbia,	60	Ohio,	40,760
Florida,	54,240	Oregon,	94,560
Georgia,	58,980	Pennsylvania,	44,985
Idaho,	84,290	Rhode Island,	1,085
Illinois,	56,000	South Carolina,	30,170
Indiana,	35,910	Tennessee,	41,750
Indian Territory, etc.,	69,830	Texas,	262,290
Iowa,	55,475	Utah,	82,190
Kansas,	81,700	Vermont,	9,135
Kentucky,	40,000	Virginia,	40,125
Louisiana,	45,420	Washington,	66,880
Maine,	29,895	West Virginia,	24,645
Maryland,	9,860	Wisconsin,	54,450
Massachusetts,	8,040	Wyoming,	97,575
Michigan,	57,430		
Minnesota,	79,205	Total,	3,501,409
Mississippi,	46,340		

Congressional Land Grants to States to June 30, 1886.

State.	Estimated Acres.	State.	Estimated Acres.
Alabama,	3,729,120	Michigan,	4,712,480
Arkansas,	3,940,272	Minnesota,	9,992,041
California,	3,400,000	Missouri,	2,985,160
Florida,	2,360,114	Mississippi,	2,062,240
Illinois,	2,595,053	Wisconsin,	4,808,486
Iowa,	6,795,527		
Kansas,	9,370,000	Total,	58,329,213
Louisiana,	1,578,720		

Congressional Land Grants to Railroad Corporations to June 30, 1886.

Corporations.	Estimated Acres.	Corporations.	Estimated Acres.
Central Pacific Railroad,	9,100,000	Sioux City & Pacific,	60,000
Central Pacific, Oregon Branch,	3,000,000	Atlantic & Pacific,	25,000,000
Burlington & Missouri River,	2,441,600	Southern Pacific,	11,930,000
Denver Pacific,	1,000,400	Union Pacific, Central Branch,	245,166
Kansas Pacific,	6,000,000	Texas & Pacific,	27,520,000
Union Pacific,	12,000,000	Total railroads,	145,297,166
Northern Pacific,	47,000,000		

Total grants to States and railroads, to June 30, 1886, 203,626,379 acres.

Disposals of Public Lands for Two Years ending June 30, 1886.

	Acres.	
	1885.	1886.
Cash entries,	3,912,450.49	3,773,498.03
Homestead entries,	7,415,885.53	9,145,135.76
Timber-culture entries,	4,755,005.57	5,391,309.38
Agricultural college scrip locations,	961.83	159.18
Locations with military bounty land-warrants,	26,833.18	28,016.05
Total scrip locations,	9,181.10	–
Donation entries,	2,200.76	1,753.84
State selections (school, swamp, and internal improvement),	299,239.68	318,613.70
Lands selected under railroad grants,	3,558,914.10	2,311,537.30
Indian lands, sales of,	881,850.21	1,132,596.74
Entries under Settler's Relief Act, etc.,	1,286.43	–
Wagon-road selections,	128,066.94	440.00
Private land-claim selections,	7,944.37	1,319.92
Indian homestead entries,	3,637.77	712.00
Total number of acres disposed of for the fiscal year,	20,995,515.59	22,124,563.92
Moneys received during the fiscal year,	$8,628,420.18	$9,031,084.34

Farm Statistics.

The following table shows the total acreage in farms, improved, land, etc., 1850 to 1880 : —

	1850.	1860.	1870.	1880.
Total acres in farm, . .	293,560,614	407,212,538	407,735,041	539,309,179
Acres improved, . . .	113,032,614	163,110,720	188,921,099	284,771,042
Number of farms, . . .	1,449,073	2,044,077	2,659,985	4,008,907
Average size of farms, . .	203	199	153	134

Immigration.

The following tables show the total immigrant arrival in the United States, by years and by countries, 1820 to 1886 : —

Arrivals by Years.

Year.	Total Immigrants.	Year.	Total Immigrants.	Year.	Total Immigrants.	Year.	Total Immigrants.
1820, .	8,385	1838, .	38,914	1855, .	200,877	1872, .	404,806
1821, .	9,127	1839, .	68,069	1856, .	195,857	1873, .	459,803
1822, .	6,911	1840, .	84,066	1857, .	246,945	1874, .	313,339
1823, .	6,354	1841, .	80,289	1858, .	119,501	1875, .	227,498
1824, .	7,912	1842, .	104,565	1859, .	118,616	1876, .	169,986
1825, .	10,199	1843, .	52,496	1860, .	150,237	1877, .	141,857
1826, .	10,837	1844, .	78,615	1861, .	89,724	1878, .	138,469
1827, .	18,875	1845, .	114,371	1862, .	89,007	1879, .	177,826
1828, .	27,382	1846, .	154,416	1863, .	174,524	1880, .	457,257
1829, .	22,520	1847, .	234,968	1864, .	193,195	1881, .	669,431
1830, .	23,322	1848, .	226,527	1865, .	247,453	1882, .	788,992
1831, .	22,633	1849, .	297,024	1866,*	167,757	1883, .	603,322
1832, .	60,482	1850, .	369,980	1867, .	298,967	1884, .	518,592
1833, .	58,640	1851, .	379,466	1868, .	282,189	1885, .	395,346
1834, .	65,365	1852, .	371,603	1869, .	352,768	1886, .	334,203
1835, .	45,374	1853, .	368,645	1870, .	387,203		
1836, .	76,242	1854, .	427,833	1871, .	321,350	Total,	13,448,657
1837, .	79,340						

* Fiscal year ending June 30.

Arrivals by Countries.

GREAT BRITAIN.		Russia,	38,316
England,	894,444	Spain,	28,091
Ireland,	3,065,761	Sweden and Norway,	306,092
Scotland,	159,547	Switzerland,	83,709
Wales,	17,893	Turkey,	619
Great Britain, not specified,	560,453	Total from Europe,	8,746,921
Total from British Isles,	4,698,098		
Austria-Hungary,	65,588	SUMMARY.	
Belgium,	23,267	Europe,	8,746,921
Denmark,	48,620	Asia,	228,047
France,	313,716	Africa,	1,631
Germany,	3,002,027	British America,	568,941
Greece,	385	All other American countries,	97,007
Italy,	70,181	Pacific,	10,474
Netherlands,	4,319	All other,	255,778
Poland,	14,831	Grand aggregate,	9,908,799
Portugal,	9,062		

Prior to 1820 no official records of arrivals of aliens were kept. It is estimated that the total number arrived in the United States from the foundation of the Government to the year 1820 was 250,000.

The nationality of immigrants to the United States in the year ending June 30, 1886, was as follows: German, 84,403; Irish, 49,619; English, 50,803; Scotch, 12,126; Swedish, 27,751; Italian, 21,315; Norwegian, 12,359; Danish, 6,225; Swiss, 4,805; French, 3,318; European, not classified, 55,404; all others, 5,668. Of the whole number of immigrants arrived in the above-named period, 266,370 came through the customs district of New York, 25,046 through Boston, and 20,822 through Philadelphia.

The records at Castle Garden, New York, for the year ending Dec. 31, 1886, show that 300,918 immigrants landed at the port of New York during that period, being 19,748 more than in 1885.

Proportion of Total European Emigration received by the United States, 1820–1882.

Of the seventeen millions of emigrants leaving Europe between 1820 and 1882, eight and one-half millions were from Great Britain and Ireland, and four and one-half millions from Germany. Nearly twelve millions came to the United States, and almost four millions went to British colonies.

British and Germans averaged sixty males to forty females; Spaniards and Italians seventy to thirty respectively.

In thirty-three years preceding 1883 there were 2,412,000 persons evicted in Ireland, and 3,130,000 emigrants therefrom.

The remittances by Irish settlers in the United States to their friends in Ireland between 1851 and 1881 amounted to $100,000,000, including $7,500,000 sent in 1881.

Agricultural Products of the United States.

The following table gives total production of leading staples for five years to Jan. 1, 1887: —

	1886.	1885.	1884.	1883.	1882.
Wheat (bush.),	457,218,000	357,112,000	512,763,900	421,086,160	504,185,470
Corn (bush.), .	1,665,441,000	1,936,176,000	1,795,528,432	1,551,066,895	1,617,025,100
Oats (bush.), .	624,134,000	629,409,000	583,628,000	571,302,402	488,250,610
Cotton (bales),.	6,550,215	5,669,021	5,714,052	6,992,234	5,465,845
Tobacco (lbs.),	485,000,000	433,401,443	541,504,000	451,545,641	513,077,558
Wool, (lbs.), .	322,205,000	329,600,000	337,500,000	320,400,000	300,000,000
Dressed hogs (est. 14 States, 1886), . .	7,000,000	6,914,181	6,447,398	5,399,564	6,130,212

Chicago Prices.

Highest and Lowest and Average for No. 2 Spring Wheat, 1877–1886.

	1886.	1885.	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877.
Low,	69⅜	73⅜	69½	90	91⅛	95⅜	86½	81⅝	77	101½
High,	85	91¾	96	113½	140	143¼	132	133½	114	176½
Average,	77	82½	82⅞	101¾	118	115¼	105¼	99⅜	96¾	127⅛

Highest and Lowest Prices of Corn, 1877–1886.

	1886.	1885.	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877.
Low,	32⅞	34½	34½	46	48⅜	36	31½	29⅜	29⅞	37⅝
High,	45	49	87	63	82⅝	76⅜	44⅛	48	42⅝	58½

Wheat Crops of the Principal Grain-Growing Nations.

Countries.	Period.	Average Annual Yield.
		Bushels.
United States,	1886	457,218,000
France,	1872–83	340,323,377
India,	1884	252,000,000
Russia,	1884	220,000,000
Italy,	1872–82	146,173,634
Germany,	1878–83	117,780,505
Austria-Hungary,	1874–82	117,140,308
Spain,	1883	117,000,000
Great Britain,	1884	85,000,000
Australia,	1884	45,014,174
Belgium,	1882	42,373,349
Turkey,	1883	40,000,000
Roumania,	1884	28,000,000
Mexico,	1883	12,466,421
Netherlands,	1870–82	11,393,917
Portugal,	1877	8,722,517
Greece,	1884	5,000,000
Sweden,	1874–82	4,483,333
Servia,	1883	4,000,000
Norway,	1884	2,750,000
Denmark,	1875–82	2,428,415
Switzerland,	1884	2,000,000

Cotton.

Annual Crops, Exports, and United States Consumption of Cotton, 1841–1886.

[In thousands of bales.]

Season.	Total Crop.	Exports.			Home Consumption.	
		To Great Britain.	To Continent.	Total Exports.	Takings of Northern Mills.	Takings of Southern Mills and Burnt.
1841–42, . .	1,684	936	529	1,465	268	*
1842–43, . .	2,379	1,470	540	2,010	325	
1843–44, . .	2,030	1,202	427	1,629	347	
1844–45, . .	2,394	1,439	645	2,084	389	
1845–46, . .	2,100	1,102	565	1,667	423	
1846–47, . .	1,779	831	410	1,241	428	
1847–48, . .	2,423	1,324	534	1,858	532	75
1848–49, . .	2,840	1,538	690	2,228	518	112
1849–50, . .	2,204	1,107	483	1,590	488	107
1850–51, . .	2,415	1,418	571	1,989	404	60
1851–52, . .	3,126	1,669	775	2,444	588	111
1852–53, . .	3,416	1,737	791	2,528	650	153
1853–54, . .	3,075	1,604	715	2,319	592	145
1854–55, . .	2,983	1,550	694	2,244	571	135
1855–56, . .	3,665	1,921	1,034	2,955	633	138
1856–57, . .	3,094	1,429	824	2,253	666	154
1857–58, . .	3,257	1,810	780	2,590	452	143
1858–59, . .	4,019	2,019	1,002	3,021	760	167
1859–60, . .	4,861	2,669	1,105	3,774	793	186
1860–61, . .	3,849	2,175	952	3,127	650	193
1861–65,† . .	–	–	–	–	–	–
1865–66, . .	2,278	1,262	293	1,555	541	127
1866–67, . .	2,233	1,216	341	1,557	573	150
1867–68, . .	2,599	1,228	428	1,656	800	168
1868–69, . .	2,434	989	458	1,447	822	173
1869–70, . .	3,114	1,475	704	2,179	777	80
1870–71, . .	4,347	2,368	800	3,168	1,072	91
1871–72, . .	2,974	1,474	483	1,957	977	120
1872–73, . .	3,874	1,920	756	2,676	1,063	138
1873–74, . .	4,130	1,852	959	2,811	1,192	128
1874–75, . .	3,831	1,833	841	2,674	1,071	130
1875–76, . .	4,632	2,005	1,227	3,232	1,220	134
1876–77, . .	4,474	1,994	1,034	3,028	1,302	127
1877–78, . .	4,774	2,047	1,309	3,356	1,345	151
1878–79, . .	5,074	2,053	1,413	3,466	1,375	198
1879–80, . .	5,761	2,554	1,310	3,864	1,574	223
1880–81, . .	6,606	2,832	1,733	4,565	1,713	230
1881–82, . .	5,456	2,295	1,256	3,551	1,677	287
1882–83, . .	6,950	2,886	1,838	4,724	1,759	313
1883–84, . .	5,713	2,485	1,432	3,917	1,537	346
1884–85, . .	5,706	2,425	1,495	3,920	1,437	318
1885–86, . .	6,575	2,565	1,771	4,336	1,781	385

* No estimate.

† Civil war; no record of cotton movement.

New York Highest and Lowest Prices for Spot Middling Cotton, 1826 to June 1, 1887.

Year.	Highest.	Lowest.	Year.	Highest.	Lowest.	Year.	Highest.	Lowest.
1826, .	14	9	1847, .	12	7	1868, . . .	33	16
1827, .	12	8	1848, .	8	5	1869, . .	35	25
1828, .	13	9	1849, .	11	6	1870, . .	25¾	15
1829, .	11	8	1850, .	14	11	1871, . .	21¼	14¾
1830, .	13	8	1851, .	14	8	1872, . .	27⅜	18⅝
1831, .	11	7	1852, .	10	8	1873, . .	21⅜	13⅝
1832, .	12	7	1853, .	11	10	1874, . .	18⅞	14¾
1833, .	17	9	1854, .	10	8	1875, . .	17⅛	13 1-16
1834, .	16	10	1855, .	11	7	1876, . .	13⅜	10⅞
1835, .	20	15	1856, .	12	9	1877, . .	13 5-16	10 13-16
1836, .	20	12	1857, .	15	13	1878, . .	12 3-16	8 13-16
1837, .	17	7	1858, .	13	9	1879, . .	13¾	9¼
1838, .	12	9	1859, .	12	11	1880, . .	13¼	10 15-16
1839, .	16	11	1860, .	11	10	1881, . .	13	10 7-16
1840, .	10	8	1861, .	28	11	1882, . .	13 1-16	10¼
1841, .	11	9	1862, .	68	20	1883, . .	11⅛	10
1842, .	9	7	1863, .	88	54	1884, . .	11 15-16	9¾
1843, .	8	5	1864, .	1.90	72	1885, . .	11 5-16	9
1844, .	9	5	1865, .	1.22	33	1886, . .	9 9-16	9 1-16
1845, .	9	4	1866, .	52	32	1887 (5 mos.),	11¼	9¼
1846, .	9	6	1867, .	36	15½			

Consumption of Cotton in Millions of Pounds.

	1830.	1840.	1860.	1870.	1880.
Great Britain, ...	250	454	1,140	1,101	1,404
United States, ...	52	135	410	530	961
Germany, ...	56	120	220	260	390
France, ...	87	110	215	250	340
Various, ...	162	231	286	239	649
	607	1,050	2,279	2,380	3,744

It appears from the above that the cotton industries of America have increased nearly three times as fast as those of the rest of the world.

Cotton Manufacture in the United States, 1881.

States.	Number of Mills.	Capital Employed. [000 omitted.]	Number of Spindles.	Number of Looms.	Bales of Cotton Consumed.	Number of Operatives.	Amount Paid for Wages. [000 omitted.]	Cost of Cotton Consumed. [000 omitted.]	Value of Production. [000 omitted.]
Me.,	24	$15,092	696,564	15,978	112,381	11,843	$2,946	$6,234	$13,459
N. H.,	36	19,517	1,008,509	25,503	157,673	16,637	4,284	8,629	17,848
Vt.,	7	936	55,081	1,180	7,404	735	161	458	730
Mass.,	175	72,896	4,276,723	95,671	574,857	61,939	15,857	31,107	72,035
R. I.,	115	29,048	1,648,917	29,881	167,480	21,918	5,468	10,457	23,170
Conn.,	81	20,100	933,540	18,161	109,703	14,419	3,494	6,281	15,775
N. Y.,	36	11,179	573,390	12,575	64,614	9,379	1,968	3,981	8,346
N. J.,	18	3,268	232,221	3,180	21,069	4,273	1,156	1,319	4,568
Pa.,	55	10,249	425,247	8,211	83,997	10,024	2,464	4,749	10,912
Del.,	9	879	48,858	786	7,512	695	145	427	1,308
Md.,	20	4,600	125,706	2,425	51,537	4,168	765	2,780	4,632
Va.,	7	1,115	44,340	1,322	11,461	1,112	169	601	1,037
N. Car.,	49	2,858	100,209	1,770	27,642	3,270	438	1,125	2,528
S. Car.,	15	2,768	92,424	1,676	33,624	2,197	340	1,723	3,750
Ga.,	41	6,363	199,578	4,390	71,389	6,372	1,119	3,591	6,216
Fla.,	1	11	816	–	350	33	5	16	25
Ala.,	15	1,186	49,432	863	14,702	1,490	225	729	1,228
Miss.,	6	951	18,563	644	6,411	716	133	301	679
La.,	2	195	6,096	120	1,354	108	12	68	82
Tex.,	2	50	2,648	71	246	71	2	11	21
Ky.,	3	360	9,022	73	4,050	354	63	138	418
Tenn.,	16	1,140	39,236	806	10,436	998	180	508	921
Ark.,	2	75	2,015	28	680	64	12	25	50
O.,	4	670	14,328	42	5,323	484	104	258	637
Ind.,	4	1,090	33,396	776	11,558	720	162	679	1,155
Ills.,	2	240	4,860	24	2,261	237	47	110	219
Mo.,	1	690	19,312	431	6,399	515	97	336	522
Mich.,	1	20	5,100	131	600	88	16	36	70
Wis.,	2	202	10,240	400	3,173	277	67	180	328
Minn.,	1	5	1,708	24	400	22	6	22	35
Utah,	1	20	432	14	56	29	2	3	7
Total,	751	$207,781	10,678,516	227,156	1,570,342	175,187	$41,921	$86,945	$192,773

Wool.

The following table shows the estimated wool product of the United States for five years to Jan. 1, 1887, in millions of pounds: —

	1886.	1885.	1884.	1883.	1882.
Iowa, Missouri, Minnesota and States east of the Mississippi, except lower Southern,	160	165	180	177	166
California,	40	36	37	40	39
Oregon, and other Western States and Territories,	56	55	45	37	30
Colorado and New Mexico,	24	26	25	21	20
Texas,	26	31	35	31	31
Georgia, Lake, Southern,	16	16	15	12	12
Total,	322	329	337	320	300

CHAPTER XII.

COAL AND IRON IN THE UNITED STATES.

Discovery and Early History of Coal. — Early Production of Pig Iron. — Progress of Steel Manufacture. — Manufacture of Iron and Steel Rails. — Iron Shipbuilding. — Coal Statistics, 1830–1887. — Pig-Iron Statistics, 1854–1887. — Steel and Steel Rails Statistics, 1880–1887. Imports and Exports, Iron and Steel, 1879–1887. — Furnaces of the United States.

Coal.

The first coal discovered in America was by Father Hennepin, near Ottawa, Ill. Anthracite from Wyoming Valley, Pa., was used by local smiths as early as 1768. In 1776, anthracite was floated down the Susquehanna from Wilkesbarre to Carlisle, where it was used in the government arsenal. In 1791, a hunter discovered the Lehigh deposits, and a quarry was opened in the same year. In 1803, one hundred tons were brought to Philadelphia, but it was not burned. In 1812, a quantity was sold at Schuylkill Falls, at $21 per ton, and the way to utilize it was discovered. It was first mined in 1813, when five boat-loads were floated down the Lehigh River and sold in Philadelphia for about $20 per ton. In 1820, regular shipments began from the Pennsylvania mines, when the regular product was about two thousand tons.

Pennsylvania also produces the largest quantities of bituminous coal, Ohio, Illinois, and West Virginia coming next on the list.

Pig Iron.

The first discovery of iron ore by Europeans in the United States was made in North Carolina in 1585 by Raleigh's expedition. In 1608, iron was first made from American ore, which was shipped to England. In 1619, iron works were established on Falling Creek, Va.; but they were destroyed in 1622 by the Indians, and never rebuilt. The first successful works in the colonies were established in Massachusetts, on Saugus River, Lynn, in 1643, by John Winthrop. They comprised a blast furnace and a refinery forge. Other early enterprises were located at Braintree, Taunton, and other places; and for a hundred years after its settlement Massachusetts led iron manufacturing on this continent. In 1731 there were six furnaces and nineteen forges, and in 1784 seventy-six iron works, in the State.

In 1728–29, Pennsylvania exported two hundred and seventy-four tons of pig iron to England.

Since the middle of the eighteenth century, Pennsylvania has been the foremost iron-making State in the Union. In recent years it has produced one-half of all the pig iron, nearly one-half of all the rolled iron, and more than one-half of all the steel made in the United States. In 1870 and 1880, Ohio ranked second and New York third in the list of iron and steel producing States.

Prior to 1830, charcoal iron was principally made, but about that time the rolling-mills began puddling iron extensively. About 1840, the introduction of bituminous and anthracite coal in the blast furnace revolutionized the iron industry of the country. Most of the charcoal furnaces in Pennsylvania have been abandoned. Still,

the country at large annually makes more charcoal pig than in 1840 or in any preceding year, as the fuel is still employed in thickly-wooded localities which lack coal. Anthracite pig was first successfully made in 1836, by Dr. Geissenhainer, in Schuylkill Co., Pa.

Bituminous coal was not used to any great extent until after 1850. In 1849 there was not a coke furnace in Pennsylvania; but in 1856 there were twenty-one in that State and three in Maryland. Even as late as 1865 only 100,000 tons of coke were used in the blast furnaces of the United States, while in 1880 the quantity had increased to 2,128,255 net tons.

Steel.

Aaron Eliot of Connecticut is the first steel maker on record in the United States prior to 1750. In that year Massachusetts had one steel furnace, New Jersey one, and Pennsylvania three. In 1805, the latter State had two furnaces, producing 150 tons of steel annually. This was all common blister steel. Until 1831, the first qualities were imported from Europe; but the product of furnaces in Pittsburg, New York, and Connecticut then began to equal the best English article. From that time much progress has been made.

Bessemer steel was first made in this country by William F. Durfee, at Wyandotte, Mich. In 1884, twenty-two Bessemer steel works had been built in the United States, of which two had been abandoned, one was being built, twenty, employing forty-five converters, were in operation. The first Bessemer steel rails were rolled at the North Chicago Mills, in May, 1865, as an experiment; and the first in the way of regular business, by the Cambria Iron Company, at Johnstown, Pa., in August, 1867.

Iron and Steel Rails.

The rails used on the early American tramways and steam railroads were made of wood strapped with iron. Wrought-iron rails, imported from England, were first used in this country on the Baltimore and Ohio road in 1832. Flat cast-iron rails were made in 1841 at Pottsville, Pa.; but no T rails were rolled until 1845. Rolling-mills at Danville, Pa., were erected expressly for that purpose. The first thirty-foot rails rolled in this country were made at Johnstown, Pa., in 1855. As there was no demand for them, the Cambria Iron Company, the manufacturers, used them in their own tracks; and it was not until 1859 that rails of this length were rolled on order. The Edgar Thomson Steel Company, near Pittsburg, rolled the first sixty-foot rails, in 1875.

Iron Shipbuilding.

The first iron vessel in the United States was built at Pittsburg, in 1839, — a steamboat called the *Valley Forge*. Others were subsequently constructed there, among them a schooner, for ocean service, and a steamer, the *Michigan*, for service on the lakes. Both were built by government order about 1842. In the same year, Capt. John Ericsson designed four propeller steamers for the Delaware and Raritan Canal, each 96 feet long, 24 feet beam, and 7 feet deep; and in 1843 he built the revenue propeller *Legaré*, for revenue service, 150 feet long, 26 feet beam, and 10 feet deep; also four propellers for the Erie Canal, each 80 feet long, 14 feet beam, and 6 feet deep, and other canal steamers. In 1846, the iron passenger steamer, for Hudson River service, the *Iron Witch*, 220 feet long, 27 feet beam, and 13 feet deep, was built at New York, from Captain Ericsson's designs. Prior to

1845 two vessels of considerable dimensions were also built at Boston; but this branch of industry made slow progress until the opening of the civil war. In 1868, five iron steamships were built for ocean service; and since that year over three hundred have been built, mostly at shipyards on the Delaware. Four fine iron steamers, having a tonnage of 3,100 each, were built of Pennsylvania iron for the American Steamship Company in 1871, 1872, and 1873, at Philadelphia, by the Cramps. In 1872, Roach built the *City of Tokio* and *City of Pekin*, registering 5,000 tons each, for the Pacific Mail Company.

Coal Statistics.

Total Coal Production of the United States, Anthracite and Bituminous, 1870–1886.

[Saward's estimates.]

Year.	Gross Tons.
1886,	106,780,033
1885,	102,124,554
1884,	99,443,062
1880 (census report),	63,773,603
1870 (census report),	29,342,581

Anthracite Coal Production of Pennsylvania, 1830–1886.

Years.	Total Gross Tons.	Years.	Total Gross Tons.
1830,	174,734	1877,	20,828,179
1840,	864,379	1878,	17,605,262
1850,	3,358,899	1879,	26,142,689
1860,	8,513,123	1880,	23,437,242
1870,	16,182,101	1881,	28,500,017
1871,	15,699,721	1882,	29,120,096
1872,	19,669,778	1883,	31,793,027
1873,	21,227,952	1884,	30,718,293
1874,	20,145,121	1885,	31,623,530
1875,	19,712,472	1886,	32,136,362
1876,	18,501,001	1887 (5 months),	12,439,916

Production of Coal in Great Britain, 1854–1886.

Years.	Gross Tons.	Years.	Gross Tons.
1854, ...	65 millions.	1880, ...	147 millions.
1860, ...	80 "	1883, ...	164 "
1870, ...	110 "	1886, ...	158 "

Iron Statistics.

Annual Production of Pig Iron in the United States since 1854.

[Statistics of the American Iron and Steel Association.]

YEARS.	Net Tons of 2,000 Pounds.			
	Anthracite, and mixed Anthracite and Coke.	Charcoal.	Coke and Raw Bituminous.	Total.
1854, ...	339,435	342,298	54,485	736,218
1860, ...	519,211	278,331	122,228	919,770
1864, ...	684,018	241,853	210,125	1,135,996
1865, ...	479,558	262,342	189,682	931,582
1870, ...	930,000	365,000	570,000	1,865,000
1875, ...	908,046	410,990	947,545	2,266,581
1880, ...	1,807,651	537,558	1,950,205	4,295,414
1881, ...	1,734,462	638,338	2,268,264	4,641,564
1882, ...	2,042,138	697,906	2,438,078	5,178,122
1883, ...	1,835,596	571,726	2,689,650	5,146,972
1884, ...	1,586,453	458,418	2,544,742	4,589,613
1885, ...	1,454,390	399,844	2,675,635	4,529,869
1886, ...	2,099,597	459,557	3,806,174	6,365,328

In 1854 this country made more pig iron with charcoal than with anthracite coal, and the manufacture of pig iron with bituminous coal had but just begun. The very next year charcoal was passed by anthracite, and in 1869 it was passed by bituminous coal. Anthracite continued the leading fuel until 1875, when it, too, was passed by bituminous coal, which has since continued to be the favorite blast-furnace fuel, and is doubtless destined to so remain.

Production of all Kinds of Pig Iron, by States, 1882–86.

[Statistics of American Iron and Steel Association.]

STATES.	NET TONS OF 2,000 POUNDS.				
	1882.	1883.	1884.	1885.	1886.
Maine,	4,100	4,400	–	440	5,060
Vermont,	1,100	–	–	–	–
Massachusetts,	10,335	10,760	4,902	869	8,124
Connecticut,	24,342	19,976	14,174	17,500	19,390
New York,	416,156	331,964	239,486	160,157	233,618
New Jersey,	176,805	138,773	82,935	73,667	157,886
Pennsylvania,	2,449,256	2,638,891	2,385,402	2,445,496	3,293,289
Maryland,	54,524	49,153	27,342	17,299	30,502
Virginia,	87,731	152,907	157,483	163,782	156,250
North Carolina,	1,150	–	435	1,790	2,200
Georgia,	42,440	45,364	42,655	32,924	46,490
Alabama,	112,765	172,465	189,664	227,438	283,359
Texas,	1,321	2,381	5,140	1,843	3,250
West Virginia,	73,220	88,398	55,231	69,007	98,618
Kentucky,	66,522	54,629	45,052	37,553	54,844
Tennessee,	137,602	133,963	134,597	161,199	199,166
Ohio,	698,900	679,643	567,113	553,963	908,094
Indiana,	10,000	9,950	2,568	6,634	16,660
Illinois,	360,407	237,657	327,568	327,977	501,795
Michigan,	210,195	173,185	172,834	143,121	190,734
Wisconsin,	85,859	51,893	52,815	24,632	65,933
Missouri,	113,644	103,296	60,043	51,408	74,523
Minnesota,	8,126	8,000	–	–	–
Utah Territory,	57	–	–	–	–
Colorado,	23,718	24,680	15,837	5,481	10,451
Oregon,	6,750	7,000	3,640	3,832	–
California,	987	5,237	2,157	–	1,750
Wash'ng'n Ter.,	–	2,317	540	1,857	2,842
Total,	5,178,122	5,146,972	4,589,613	4,529,869	6,365,328

Our production of iron ore in 1886 was much larger than in any previous year, amounting in round numbers to ten million gross tons. The Lake Superior region still remains our most important source of domestic supply. In 1886 this district shipped 3,562,570 gross tons, an increase of 1,106,022 tons over the 2,456,548 tons shipped in 1885.

Of the total production of pig iron in 1886, Pennsylvania produced 51.7 per cent.; Ohio, 14.2 per cent.; Illinois, 7.8 per cent.; and Alabama, 4.4 per cent. No other State produced as large a percentage as Alabama.

Production of Iron and Steel and Iron Ore in 1886.

IN COMPARISON WITH THAT OF 1885 AND OF 1876.

PRODUCTS: Net Tons (except Nails).	1886.	1885.	Increase per Cent.	1876.
Pig iron,	6,365,328	4,529,869	40	2,093,236
Bessemer steel ingots,	2,541,493	1,701,762	49	525,996
Bessemer steel rails,	1,763,667	1,074,607	64	412,461
Open-hearth steel ingots,	245,250	149,381	64	21,490
Open-hearth steel rails,	5,255	4,793	9	None.
Crucible steel ingots,	80,609	64,511	25	39,382
All kinds of rolled iron, except rails,	2,259,943	1,789,711	26	1,042,101
Iron rails,	23,679	14,815	60	467,168
Kegs of iron and steel cut nails,	8,160,973	6,696,815	22	4,157,814
Blooms from ore, pig iron, and scrap,	41,909	41,700	–	44,628

Annual Production and Average Price of Bessemer Steel Rails in the United States since 1867, in Gross Tons, and Rates of Duty imposed on Foreign Rails.

YEARS.	Production in Gross Tons.	Price in Currency.	Duty.
1867,	2,277	$166 00	45 per cent. ad valorem.
1868,	6,451	158 50	
1869,	8,616	132 25	
1870,	30,357	106 75	
1871,	34,152	102 50	$28 per ton to Aug. 1, 1872; $25.20 to March 3, 1875; $28 from that date to July 1, 1883.
1872,	83,991	112 00	
1873,	115,192	120 50	
1874,	129,414	94 50	
1875,	259,699	68 75	
1876,	363,269	59 25	
1877,	385,865	45 50	
1878,	491,427	42 25	
1879,	610,682	48 25	
1880,	852,196	67 50	
1881,	1,187,770	61 13	
1882,	1,284,067	48 50	
1883,	1,148,709	37 75	$17 per ton from July 1, 1883.
1884,	996,983	30 75	
1885,	959,471	28 50	
1886,	1,574,703	34 50	
1887 (March),	–	39 50	

The lowest average annual price at which Bessemer steel rails have been sold in this country was reached in 1885, namely, $28.50, but sales were made at still lower figures in both 1884 and 1885.

Approximate Consumption of Rails in United States, 1867–1886.

Years.	Made in United States.	Imported.		Approximate Consumption. Net Tons.
		Iron.	Steel.	
1867,	462,108	163,049		625,157
1868,	506,714	250,081		756,795
1869,	593,586	313,163		906,749
1870,	620,000	399,153		1,019,153
1871,	775,733	566,202		1,341,935
1872,	1,000,000	381,064	149,786	1,530,850
1873,	890,077	99,201	159,571	1,148,849
1874,	729,413	7,796	100,515	837,724
1875,	792,512	1,174	18,274	811,960
1876,	879,629	287	None.	879,916
1877,	764,709	None.	35	764,744
1878,	882,685	None.	10	882,695
1879,	1,113,273	19,090	25,057	1,157,420
1880,	1,461,837	132,459	158,230	1,752,526
1881,	1,844,100	137,013	249,308	2,230,421
1882,	1,688,794	41,992	182,135	1,912,921
1883,	1,360,694	757	38,220	1,399,671
1884,	1,144,851	94	3,074	1,148,019
1885,	1,094,215	57	2,395	1,096,667
1886,	1,792,601	7	46,571	1,839,179

Imports, Manufactured Iron and Steel and Iron Ore, 1879–1886.

Manufactured Iron and Steel.			Iron Ore.	
Years.	Net Tons.	Values.	Years.	Gross Tons.
1879,	862,382	$33,331,569	1879,	284,141
1880,	2,112,341	80,443,362	1880,	493,408
1881,	1,322,439	61,555,077	1881,	782,887
1882,	1,335,371	67,075,125	1882,	589,655
1883,	777,650	47,506,306	1883,	490,875
1884,	733,260	37,078,122	1884,	487,820
1885,	647,895	31,144,552	1885,	390,786
1886,	1,230,393	41,603,779	1886,	1,039,433

Exports, Manufactured Iron and Steel, 1879–1886.

Years.	Values.	Years.	Values.
1879, ...	$14,223,646	1883, ...	$22,716,040
1880, ...	15,156,703	1884, ...	19,290,895
1881, ...	18,216,121	1885, ...	16,622,511
1882, ...	22,348,838	1886, ...	14,865,087

The tonnage of the above exports are not given, nor statistics of our insignificant exports of iron ore.

Iron Furnaces of the United States.

[May 1, 1887, compared with same date, 1886.]

	May 1, 1887.	May 1, 1886.	Increase.
Anthracite:			
In blast, ...	137	119	18
Weekly capacity (tons), ...	43,802	36,924	6,878
Bituminous and coke:			
In blast, ...	148	129	19
Weekly capacity (tons), ...	83,509	67,888	15,621
Total:			
In blast, ...	285	248	37
Weekly capacity (tons), ...	127,311	104,812	22,499

Compared with April 1, there is a decrease of two furnaces in blast, but an increase in weekly capacity of 1,930 tons. The production of pig iron during the first four months of 1887 is estimated at 715,234 tons of anthracite and 1,321,418 tons of bituminous iron; total, 2,036,652 tons, or at the rate of 6,100,000 tons for the year, exclusive of charcoal iron. Another estimate for the year, embracing all classes of pig, puts the figures at 7,840,000 tons.

CHAPTER XIII.

ELECTRICAL DEVELOPMENT.

Telegraph Statistics of the United States and of the World. — Cable Systems of the World. — Their Capitalization, Length, etc.

Telephone Systems of the United States and of the World. — Miles of Wire, Exchanges, Subscribers, Telephones in Use, etc.

The Electric Light. — Capital invested in Manufacturing and in Local Plants in the United States — Growth of Electric Lighting since 1880. — Its Cost as compared with Gas. — Electric Lighting of Railway Trains, etc.

Electric Railways. — Systems in Use. — Electric Railway Systems of Europe and the United States, and their Physical and Financial Details.

Chronology of Electrical Science from 1600 to 1886.

Telegraphs.

The power of transmitting electricity was discovered in 1727. Franklin and English scientists experimented twenty years later. In 1758, Alexander Marshall invented a plan for telegraphic communication; in 1774, Lesage, a Swiss physician, operated an apparatus. The discovery of galvanism in 1790 gave telegraphy an impulse, and two unsuccessful plans were devised. Morse invented the first practical system, in 1832, and constructed a working model in 1835, which he patented two years later. Professor Weber built the first land line, 6,000 feet long, at Gottingen, in 1833. The earliest in England, built in 1839, extended from Paddington Sta-

tion, London, to West Drayton, thirteen miles. In July, 1844, a line was built from Washington to Baltimore, which was extended during the next year to New York and Boston. The first company was the Magnetic Telegraph Company. Meantime several lines were constructed in England, but the first company was not incorporated until 1846. In 1880 there were seventy-seven distinct telegraph systems in the United States.

The following table gives dates of earliest telegraph construction by the principal nations of Europe. The systems are all under government control.

Country.	Date.	Route of Line.
France, ...	1845,	Paris to Rouen.
Prussia, ...	1849,	Mayence to Frankfort-on-the Main.
Belgium, ...	1851,	Brussels to Antwerp.
Switzerland, ...	1852,	–
Holland, ...	1852,	–
Sweden, ...	1853,	Stockholm to Upsala, 60 miles.
Russia, ...	1853,	St. Petersburg to Cronstadt.
Spain, ...	1854,	Madrid to Irun.
Norway, ...	1855,	–

Telegraph Statistics of the World.

Countries.	Year.	Miles of Lines.	Miles of Wires.	Number of Messages.
Austria-Hungary,	1883	33,712	98,065	10,170,894
Bavaria,	1883	5,215	22,848	–
Belgium,	1885	3,749	17,587	6,788,071
Brazil,	1885	5,800	–	331,884
Canada,	1883	23,320	–	–
Cape of Good Hope,	1885	4,219	–	740,791
Chili,	1885	7,625	–	478,289
China,	1885	3,089	5,482	–
Colombia,	1883	2,357	–	288,876
Cuba,	1882	2,835	5,987	–
Denmark,	1884	2,360	6,532	1,297,434
Dutch East Indies,	1883	5,762	–	383,501
Egypt,	1886	2,701	5,221	–
France,	1884	56,545	205,470	29,452,708
Germany,	1884	49,728	180,000	18,849,855
Great Britain and Ireland,	1886	28,500	158,568	33,278,459
Greece,	1885	3,720	4,570	627,693
Guatemala,	1884	2,880	–	223,994
India, British,	1884	23,341	68,694	1,837,048
Italy,	1884	17,816	–	6,778,717
Japan,	1884	5,000	13,481	2,731,810
Mexico,	1884	19,000	58,800	–
Netherlands,	1885	2,838	10,318	3,320,869
New South Wales,	1884	10,000	18,681	2,334,052
New Zealand,	1885	4,264	10,474	1,654,305
Norway,	1885	5,563	9,958	950,018
Persia,	1885	3,824	6,124	–
Portugal,	1884	3,045	7,257	1,727,293
Queensland,	1885	6,979	11,300	1,012,255
Roumania,	1884	3,256	6,800	1,203,500
Russia,	1883	65,394	146,690	10,222,139
South Australia,	1885	5,291	9,067	–
Spain,	1883	10,733	26,160	3,019,831
Sweden,	1885	4,102	13,044	1,178,959
Switzerland,	1885	4,300	10,386	2,942,767
Turkey,	1884	14,617	26,060	1,259,133
United States,	1886	218,247	667,710	72,000,000
Victoria,	1885	4,020	8,055	1,594,296

Total miles of line for the world, including 22 countries not given in detail above, 710,096.

Progress of Telegraphy in Great Britain.

1870-1887.

When the British government assumed control of the private telegraphic enterprise in 1870, there were 2,932 telegraph offices in the United Kingdom, and at the end of March, 1887, there were 6,514 offices. In the financial year 1870–71, the post office controlled 69,000 miles

of wire, over which 9,850,000 public messages were sent, bringing in gross receipts of £612,000, the working expenses being £350,000. This contrasts with the fiscal year 1885–86 of 170,000 miles, 39¼ millions of messages, £61,800,000 receipts, with expenditure in excess of receipts consequent on exceptional outlay. It is estimated that one result of the halfpenny per word telegram will be a great increase in the number of messages. This year it is anticipated that the total number will probably exceed 52,000,000.

In London there are 255 miles of pipes containing telegraph wires, which represent a total of 12,212 miles. Beyond this there are 868 miles of what is termed "open" wire in the metropolitan area. The following is a comparative return, showing the mileage of line and wire in the United Kingdom: —

Year.	Overhead.		Underground.	
	Line. Miles.	Wire. Miles.	Line. Miles.	Wire. Miles.
1877, ...	23,766¼	101,627¼	394¾	8,013¾
1878, ...	24,438¾	102,074	445¾	9,023
1882, ...	25,001½	111,811¾	478¾	10,993¼
1886, ...	26,425	150,590	677¾	19,605

Telegraphs of the United States, Jan. 1, 1887.

Lines.	Miles of Wire.	Miles of Poles.	No. of Offices.	No. of Employees.
Western Union, . . .	497,420	153,217	15,417	24,717
Baltimore and Ohio, . .	61,919	8,353	1,300	2,960
United lines, ...	22,727	3,058	472	930
United States Government, .	3,000	3,000	55	90
Deseret, ...	1,092	963	56	57
Smaller lines, . . .	81,552	49,656	4,373	6,756
Total, ...	667,710	218,247	21,673	35,510

The Western Union Telegraph Company was organized in 1851, with a capital of $360,000. Its lines at first extended from Buffalo to Louisville. No dividends were paid during the first seven years, all earnings being devoted to the acquisition and construction of other lines. It has since absorbed many independent companies, and controls a number of others under lease or otherwise.

The following table gives a statement of its mileage and operations for the ten years ending June 30, 1886 :—

WESTERN UNION TELEGRAPH COMPANY.

YEAR.	Miles Wire.	Offices.	Messages.	Net Earnings.	Surplus or Deficit.
1877, ...	194,323	7,500	21,158,941	$3,140,128	–
1878, ...	206,202	8,014	23,918,894	3,551,543	–
1879, ...	211,566	8,534	25,070,106	4,800,440	–
1880, ...	233,534	9,077	29,215,509	5,833,938	–
1881, ...	327,171	10,737	32,500,000	5,908,230	–
1882, ...	374,368	12,068	38,842,247	7,118,070	$1,852,408*
1883, ...	428,546	12,917	40,587,177	7,660,350	1,994,314*
1884, ...	450,571	13,761	42,076,226	6,610,436	498,916*
1885, ...	462,283	14,184	42,096,583	5,700,924	166,535*
1886, ...	489,607	15,142	43,289,807	3,919,855	14,169†
1887 (Jan. 1), . .	497,420	15,417	–	–	–

* Surplus. † Deficit.

CABLES.

Attempts were made to lay submarine wires in 1839. The first successful one crossed the Hudson River at New York City, in June, 1848. In January, 1849, a successful two-mile cable was laid in England. One was put down between Dover and Calais in the next year. It worked but a single day, and was renewed by a cable twenty-seven miles long in 1853, when another was laid between Dover and Ostend, eighty miles. A third cable, one hundred and twenty miles long, was laid the same year between England and Holland. From 1853 to 1858, thirty-seven cables, with a total length of 3,700

miles, were laid. The first Atlantic Cable, 2,500 miles long, between Valentia, Ireland, and Trinity Bay, N. F., was finally completed July 29, 1858, after more than a year of unsuccessful experiments. The first despatch went over Aug. 12, 1858.

The following table gives dates of construction, location, and length of the early cables of the world: —

Date.	Between —	Miles.
1850,	Dover and Calais,	25
1852,	Holyhead and Dublin,	65
1858,	Valentia, Ire , and Trinity Bay, N. F.,	2,500
1866,	Ireland and Newfoundland,	1,896
1869,	France and West Indies,	2,584
1869,	France and St. Pierre,	–
1871,	Singapore, China, and Australia,	4,980
1874,	Lisbon and Brazil,	6,840

Table showing Capitalization of the Cable Companies of the World, Jan. 1, 1877.

Name.	Capital.
Anglo-American Telegraph Company,	$35,000,000
Eastern Telegraph Company,	18,485,000
Eastern Extension, Australasia and China,	9,985,000
Brazilian Submarine Telegraph Company,	6,500,000
German Union Telegraph and Trust Company,	950,900
Indo-European Telegraph Company,	2,125,000
Direct United States Cable Company,	6,500,000
Western and Brazilian Telegraph Company,	7,692,200
Submarine Telegraph Company,	1,691,125
Cuba Submarine,	1,100,000
Direct Spanish,	874,045
Great Northern,	7,500,000
Mediterranean Extension,	760,000
West Indies and Panama,	6,666,050
Total,	$105,829,320

Eleven out of the fourteen companies paid dividends varying in amount from one-half of one per cent. to ten per cent. during 1876.

There are now twelve submarine cables between Europe

and America, the longest being the French line from Brest to St. Pierre Miquelon, which is over 3,000 miles in length.

Telephones.

The first transmittal of sound by electricity was made by Dr. Page of Salem, in 1837. A Mr. Farrar of New Hampshire, prior to 1860, made an apparatus by which music was transmitted, but failed to construct a transmitter for speech. Philip Reis, a German, invented the diaphragm transmitter about 1860; he used Page's receiver. In 1876, Professor Bell brought forward an entirely distinct system; but at first his instrument could only be used for twenty miles, and was not efficient. Elisha Gray, Thomas A. Edison, Professor Hughes, and others made improvements which put the system on a practical basis. The first telephone patents were granted in 1877; and twenty-two were issued before Jan. 1, 1878. The first companies were the American Speaking Telephone Company and the American Bell Telephone Company. The latter was organized in 1880, under a special charter from the State of Massachusetts. The Western Union Company transferred to the Bell Company the Gray and Edison patents under a contract giving it twenty per cent. of the latter's net earnings; and agreed not to engage in telephone business.

Priority of invention over Professor Bell has been claimed by Edison, Gray, Dolbear, Daniel Drawbaugh, James W. McDonough, and others; and the dispute has given rise to many legal suits against the Bell Telephone Company, some of which are not yet settled. Drawbaugh asserts that he perfected a telephone on the exact principles followed by Bell, as early as 1867, and operating in the same way. Telephone statistics are meagre and difficult of access, excepting those of the American Bell Company, the principal organization in the world.

Telephone Statistics of the United States.

The following figures, to December 31 of each year, were mostly furnished by the licensees of the American Bell Telephone Company: —

	1886.	1885.	1884.	1883.
Capital stock and investment,	$54,186,111[1]	$54,320,554[2]	$53,342,141[3]	$49,953,352
Aggregate capital,	53,535,021[4]	53,533,264[5]	51,490,751[6]	–
Total gross earnings,	10,883,361[4]	10,066,640[5]	9,050,213[6]	7,981,079
Total expenses,	6,838,171[4]	6,462,843[5]	5,755,415[6]	5,017,141
Total net earnings,	4,045,182[4]	3,603,796[5]	3,294,803[6]	2,963,506
Per cent. expense to gross earnings,	62.83[4]	64.20[5]	63.69[6]	–
Per cent. net earnings to capital,	7.56[4]	6.73[5]	6.4[6]	–

[1] Sixty-two companies. [2] Sixty-three companies. [3] Sixty-four companies.
[4] Forty-seven companies. [5] Forty-six companies. [6] Forty-five companies.

On the above basis, the entire telephone business of the United States is estimated as follows: —

	1886.	1885.	1884.
Gross earnings,	$11,150,000	$10,440,000	$9,500,000
Expenses,	7,000,000	6,700,000	6,050,000
Net earnings,	4,150,000	3,740,000	3,450,000
Aggregate dividends reported,	2,703,483	2,077,064	1,921,239
Gross ex-territorial receipts,	557,293	544,716	512,034
Number toll stations,	3,944	4,007	3,341
Number toll private line stations, etc.,	16,121	13,994	12,868
Total stations,	167,133	155,751	151,056
Length cables in use, feet,	1,059,731	738,678	582,442
Number extra-territorial lines,	911	931	826
Miles extra-territorial pole lines,	31,143	31,395	25,766
Miles extra-territorial wire lines,	43,767	42,461	35,631

Average Calls in Exchanges, and Average Cost to Subscriber per Connection.

	1886.		1885.		1884.	
	Calls.	Cost, Cents.	Calls.	Cost, Cents.	Calls.	Cost, Cents.
Exchanges of 100 or less subscribers,	4.6	3.3	4.4	3.5	4.	4.
Exchanges of 100 to 200,	5.3	2.6	4.75	2.8	4.56	4.3
Exchanges of 200 to 500,	6.9	2.6	5.41	2.4	5.46	3.1
Exchanges of 500 to 1,000,	6.6	3.	6.8	2.6	5.59	3.6
Exchanges of 1,000 to 1,500,	6.	4.4	6.56	3.4	5.81	3.6
Exchanges of 1,500 or more,	6.8	4.1	6.51	4.1	5.76	5.8
Total daily exchange connections in United States,	856,454		746,515		697,966	
Total per year,	312,605,710		272,478,705		251,267,760	
Average daily number extra-territorial messages,	7,402		6,933		8,330	
Total yearly,	2,701,730		2,530,545		2,998,800	
Total construction and investment account, Jan 1, 1886 (44 companies),	$33,865,061		31,114,517		28,209,866	
Added during year,	1,696,316		1,151,469		2,363,787	
Total,	$35,561,367		$32,266,469		$30,593,653	

American Bell Telephone Co., 1881–87. (Organized 1880.)

	March 31, 1887.	Dec. 31, 1886.	Dec. 31, 1885.	1884-83.	1883-82.
Exchanges and branch offices,	1,182	1,175	1,203	1,325	1,070
Total miles wire,	128,231	114,046	101,592	85,896	68,571
Total subscribers,	147,068	137,750	134,847	123,625	97,728
Total employees	5,843	5,438	5,168	8,762	3,716
Total instruments,	–	353,518	330,040	325,574	298,580
Total gross earnings,	–	$3,097,000	$2,765,884	$2,295,594	$1,516,031
Total net income,	–	1,973,350	1,809,996	1,475,431	972,044

Electric Lighting in the United States.

At the beginning of 1887 there were about 40 "parent" companies selling electric light apparatus in the United States. The total capital invested in producing electric light apparatus and in supplying electric light locally is estimated at from $100,000,000 to $125,000,000. There

are from 650 to 700 local electric lighting companies, and about 100 gas companies supplying electric light also.

The demand for arc carbons is about 150,000 per day; the production is over 200,000. The twelve companies made a combination in April, 1887, to maintain prices at $20 to $30 per 1,000.

The growth of the electric (arc) lighting business has been very rapid of late years. It dates, practically, from 1881–82. The following table shows the status of arc lighting: —

Year.	Thousands of Lights.	Year.	Thousands of Lights.
1881–82, ...	6	1884, ...	48
1882, ...	12	1885, ...	96
1883, ...	24	1886 (estimated), . .	150

The business is increasing at the rate of 40,000 to 50,000 arcs per year.

There are over 750,000 incandescents in the United States. In April, 1887, the Edison system was in use in, or under contract for, 90 central stations having a dynamo capacity of nearly 300,000 lamps, or 400,000 to 450,000 in use. In isolated Edison plants the growth has been as follows: —

Year.	Thousands.	Year.	Thousands.
1881, ...	5	1884, ...	93
1882, ...	29	1885, ...	132
1883, ...	64	1886, 702 plants, . .	181

The other incandescent systems are credited with 200,000 to 250,000 lamps.

The New York rate for arc lights of 2,000 candle-power in 1886 was seventy cents per night. Competition has cut this to fifty cents in 1887.

In January, 1886, the central station capacity in sixty large cities was nearly forty thousand arc lights. In over eighty other cities and towns the average was one hundred and fifty arc lights; and nearly seventy more ranged between fifty and one hundred. In the United States are over forty thousand isolated arc lights.

America utilizes fifteen thousand to twenty thousand horse power from turbines in electric lighting.

In the Equitable Building, New York, is a plant of five thousand 16 candle power incandescents and fifty of 100 candle power. It has seven 600-light dynamos. There are about thirty miles of cable and wire.

About one hundred thousand arc lights are burning nightly in America. They burn about three hundred and twenty-nine nights yearly. The earnings average about forty cents nightly. This would yield $13,160,000 a year. Allowing seventy-five per cent. expenses, this would be $3,290,000 on a capital of about $35,000,000, or not quite ten per cent. per annum. Many commercial lights are not used steadily. The above applies to arc lighting. The local incandescent companies also generally pay dividends of five to fifteen per cent.

Authentic figures show that arc lights furnish at least four times the light of gas, at two-thirds the expense. Incandescents cost as follows: At the Anamosa, Ia., penitentiary, a 16 candle power lamp costs .2451 cent per hour; oil and candles, .552. At the School for the Blind, Lansing, Mich., ninety-eight lamps of 16 candle power, one hour, including interest, cost 18½ cents. In the Public Printing Office, Washington, the cost per 16 candle power lamp (Edison) per hour is 0.67 cent. At the Missouri Institution for the Deaf and Dumb, Fulton, Mo., the incandescent costs about the same as gas, at $1 per thousand feet.

Arcs of 1,200 to 2,000 candle power are generally used

on the street, but Edison "Municipal" and other incandescents are being introduced.

The Westinghouse Company has lately installed several thousand "alternating" system incandescent lights, with "converters," for which immense economy is claimed. At Plainfield, N. J., the charge for lights as operated by this system is $35 per year for eight 16 candle power in residences.

Commercial incandescents are now made of ½ to 150 candle power. Some lamps up to 400 candle power have been made and used. A 2,000 candle power arc light requires a trifle less than 1 horse power. In incandescent lighting, from eight to ten lamps of 16 candle power to 1 horse power are guaranteed. The life of incandescent lamps averages from 600 to 800 or 1,000 hours; but they often last 2,000 and 3,000 hours. Incandescents, with suitable protection, are now run on the arc circuits. Thus at Hoboken, N. J., on the Thomson-Houston circuits 16 candle power incandescents are run on the arc mains at a charge of 50 cents per month per lamp.

Train Electric Lighting. — During 1886, incandescent lights fed from secondary batteries have been introduced on several railroads in New York and New England, and the work is growing. The cost per lamp of 16 candle power per hour is about one-half cent. From twelve to twenty-four lamps are used in a car, and the necessary batteries weigh only about one thousand pounds.

Electric Railways.

There are three systems of applying electric power to the operation of railways: 1. Electric current conveyed from the dynamo to the cars by a wire overhead upon which rides a small metallic carriage connected with the cars by wires; 2. Current conveyed by a third rail or by an underground conduit, reaching the motor in the car by

means of a collecting wheel or brush in contact with the electrical conductor; 3. Current supplied by storage cells charged with electricity and carried in the cars.

Foreign Electric Railways.

Europe has now eleven electric railways. These have all been built within eight years.

At Kew Bridge, London, the electric motor is employed upon the Acton tramways. Power is supplied by 50 storage cells carried under the car seats. With about 5 tons total weight, and about 8 horse power developed, 50 persons are carried at the rate of 6 miles per hour.

At the Industrial Exhibition at Berlin, in 1879, Dr. Werner-Siemens built an electric circular narrow-gauge railway 2,700 feet long. Three cars now run, carrying 25 passengers, at a speed of 15 to 20 miles per hour. Mr. Reckenzaun has experimented successfully upon street cars driven by a storage battery. The estimated expense of this system is about one-half that of direct horse power. It was tested at Berlin in December, 1885. At Berlin an electric railway, 1½ miles long, was built in 1884, having 2 motor cars, and carrying 100,000 passengers per year.

At Vienna, a Siemens railway was built, 2.8 miles long, with 12 cars, which carries 340,000 passengers a year.

At Breuil, France, an electric motor line has been operated since March, 1882. The train consists of an electric locomotive weighing 2,000 pounds, a tender with Faure accumulator weighing 1,500 pounds, and cars each of which when loaded weighs about 1,700 pounds, the total weight of train being about 7 tons.

One mile of electric railway has been in operation at Brighton, England, since 1883. It draws 2 cars, and carries 250,000 passengers per year. Another, at Bessbrook, upon which are drawn 6 carriages, weighing 2 tons

each, hauls a train carrying 34 passengers, at a rate of 15 miles per hour. Power is supplied by dynamos moved by water power. At Blackpool, England, a line 2 miles long was opened in September, 1885. It is operated by two 25 horse power stationary engines, which develop a sufficient current to move 10 cars and 400 passengers. Cost of line, $55,000. It carries 300,000 passengers per year.

At the Antwerp exhibition, in 1885, careful tests were made upon tramway motors of different kinds, and electric motors obtained the highest prize. A road at Frankfort, 4 miles long, hauls 14 cars, and carries 990,000 passengers a year; at Zankerode (mine), 1882, 2,370 feet double track, 16 freight cars, 300 tons daily; Hohenzollern (mine), 1884, 2,460 feet, 15 cars, 300 tons daily; Portrush, 1883, 6 miles, 4 cars, 100,000 passengers a year; Besspool, 1885, 3 miles, 8 cars, 300,000 passengers yearly, and 30,000 tons freight. A road in the Austrian Alps, 15 miles long, to cost $350,000, has been chartered.

Tram cars, run by accumulators, or upon the electrical storage system, are in use at Hamburg, Germany, built 1886, 2 cars; Brussels, 1887, 5 cars; also for handling coal at the collieries of Drybrook, England.

Electric Railways of the United States.

The United States has also from ten to twelve electric railway systems. The first was put in operation at Chicago in February, 1883, length, 400 feet. A street railway 3,000 feet long was operated by electric motor at Toronto, Canada, in 1884. Others, at South Bend, Ind., 2½ miles; New Orleans, 1885, ¾ mile; Minneapolis, Minn., 1885; Montgomery, Ala., 1885, 11 miles, 18 cars; Detroit, at Highland Park, 1886, 3½ miles, 2 cars,

200,000 passengers a year; Dix Railroad, Detroit, Sept. 1, 1886, 1¾ miles, 4 cars, 300,000 passengers; Winsor, Can., 1885, 2 miles, 2 cars, 200,000 passengers yearly; Appleton, Wis., 1886, 4½ miles, 8 cars, 400,000 passengers; Port Huron, Mich., 1885, 4 miles, 8 cars, 75,000 passengers yearly; Scranton, Pa., 1886, 3¼ miles, 3 cars, 300,000 passengers; Philadelphia, 1886, 2,600 feet of street railway at Ridge Avenue, Schlesinger system; Baltimore, Md., 1885, 2 miles, 5 cars, 200,000 passengers carried in 1886; Denver, Col., 1886, 3½ miles, 7 cars, 300,000 passengers; Los Angeles, Cal., 1887, 3 miles, 8 cars; Lima, O., 3 miles, 6 cars; Richmond, Va., 11 miles, 40 cars; Binghamton, N. Y., 1887, 4½ miles, 5 cars; San Diego, Cal., 9 miles, 4 cars; Ansonia, Conn., 3½ miles; St. Joseph, Mo., 20 cars. Orange, N. J.; Harrisburgh, Pa.; Woonsocket, R. I.; Kansas City; Pittsburgh; New York City; Mansfield, O.; Wichita, Kan.; San Francisco; and Ithaca, N. Y., also have systems.

The total of passengers carried in the United States by electric street railways now reaches over 3,000,000 yearly. The length of track operated approximates 50 miles, with over 75 motors and cars running. The roads in construction will double these figures during 1887. The total cost of furnishing power with direct supply of current does not exceed $2.50 to $3 per day per car. With storage batteries it is about $4 to $5. The total cost of horse cars per day is $6.50 to $9.50.

Work is also being done outside of the street railway department. A road has been put in operation in a Boston sugar refinery, and another, 6,000 feet long, has been constructed in a mine, the train hauled being 15 to 20 loaded cars.

Chronology of Electrical Science.

1600 to 1887.

1600. — Dr. William Gilbert published his book "De Magnete," marking the birth of the science.

1660. — Otto Von Guericke, inventor of the air pump, made the first frictional electric machine.

1720-29. — Stephen Grey, London, improved conductors and insulators.

1733. — Dufay made the distinction between "vitreous" and "resinous" electricity.

1745. — Discovery of the Leyden jar by Dean Von Kleist and others.

1747. — Discharge of Leyden jar transmitted a considerable distance. Franklin began studying electricity.

1749. — Franklin conceived the identity of the "electrical fluid" with lightning.

1752. — Franklin's suggested experiment of drawing electricity from the clouds first made.

1753. — The practicability of the electric telegraph first hinted at.

1783. — Volta invented the condenser.

1786-89. — Galvani's discovery of galvanic action.

1800. — Discovery of Volta's battery, producing current through chemical action.

1800. — Coxe, of Pennsylvania, invented a rude system of telegraphy.

1801. — Gautherot discovered that the electrodes through which the current of a primary battery had been discharged became capable of producing a current.

1802. — Ritter made the first secondary battery.

1808. — Davy batteries gave the first display of the electric light.

1819. — Oersted discovered the principles of electro-magnetism.

1820. — Ampère enunciated the fundamental principles of electro-dynamics.

1821. — Seebeck discovered the thermo-electric battery.

1824. — Sturgeon made the first electro-magnet.

1829. — Electro-magnet, improved, exhibited by Professor Henry.

1831. — Faraday discovered "induction," or the production of electricity by magnets, on which all modern electrieal engineering is based. He made the first "dynamo."

1832. — Pixii made the first practical magneto-electric machine. Baron Schilling showed a working of telegraph with thirty-six needles.

1833. — Gauss and Weber set up a successful telegraph line at Gottingen.

1833. — First rotary electric motor described.

1834. — Davenport made and used the first American electric motor.

1835. — Professor Henry worked a short telegraph at Princeton.

1836. — Daniell, in England, invented his famous battery. Cooke and Wheatstone established a needle electric telegraph system in England. Steinheil used the earth as a return circuit for telegraph.

1838. — Jacobi propelled a boat by electric motor and primary batteries.

1839. — Jacobi, Spencer, and Jordan describe methods of electrotyping.

1840. — Wright's electrotyping process patented in England. Morse, reducing telegraph to practicability, took out his first patent in United States. Photographs taken by Prof. B. A. Silliman, Jr., and Dr. W. H. Goode by the electric (arc) light; current produced by a battery of 900 cells.

1841. — De Moleyns patented in England a lamp in which a platinum wire in an exhausted glass globe was coated with particles of plumbago.

1842. — The celebrated Bunsen battery was invented. Grove made his well-known "gas battery" with platinum plates, giving a secondary current. Telegraph poles first used in England.

1843. — Morse obtained an appropriation of $30,000 for a telegraph.

1844.—Morse's first line built,—Washington to Baltimore. Foucault invented a practical form of arc light.

1845-46.—Starr, of Cincinnati, invented an incandescent lamp in which a thin strip of graphite was held between clamps affixed to a porcelain rod; the rod was suspended by a platinum wire sealed in the globe. He proposed to light cities by electric lamps on towers. Electric light (arc) used at the Paris opera.

1848.—Archereau applied the important detail of the solenoid to arc lamps.

1850.—First cable between Dover and Calais.

1851.—Professor Page with his motor made a trip with a car from Washington to Bladensburg.

1854-55.—Hjorth, of Denmark, patented devices for augmenting currents by reaction of electro-magnets on each other.

1856.—Werner Siemens brought out his armature for dynamos.

1857.—De Changy invented a system permitting the divisibility of the current for lighting.

1858.—First Atlantic cable laid.

1859.—Planté finds lead the best metal for secondary batteries and covers the surface with the peroxide by the primary current.

1860.—Pacinotti, in Italy, made continuous current dynamos, which he used as motors.

1861.—Kirchhof, in America, makes secondary batteries of alternate plates of spongy lead and peroxide.

1862.—Electric light installed in Dungeness (England) lighthouse, June 6.

1865.—Second Atlantic cable.

1867.—Siemens and Wheatstone enunciate clearly the principle of converting mechanical energy into electrical in the dynamo.

1869-71.—Gramme invented his celebrated dynamo for continuous currents.

1872.—Duplex system of telegraphy invented.

1873-76.—Lodyguine, Koun Kosloff and Bouliguine, in Russia, put in operation crude incandescents, having carbons in vacuo, contained in glass globes variously sealed.

1873.—At the Vienna Exposition a Gramme dynamo used as a motor worked a pump, the current being transmitted 1,400 yards.

1874.—Edison produced his quadruplex telegraph system.

1876.—A. G. Bell exhibited his telephone at the Centennial Exhibition.

1879.—Edison's incandescent lamp patented. Sawyer showed an incandescent in which the carbon was placed in nitrogen to prevent combustion. Notable exhibition of plowing with electric motors,—six acres in six hours,—power transmitted one mile. Siemens and Halske started a practical railway at Berlin in 1879.

1880.—Swan exhibited his incandescent with a carbon filament.

1881.—Faure produces his celebrated secondary battery, in which the active material is mechanically applied.

1882.—The first Edison central station for general incandescent lighting started in New York City, September. Deprez at the Munich Exposition made the first long-distance transmission of power electrically,—37 miles.

1883.—Prof. Fleeming Jenkin brought out his system of "telpherage," or electric transmission of passengers and freight, using suspended wires as tracks for the cars.

1884.—Electric power stations (Daft system) established in New York and Boston, distributing current to motors widely scattered.

1885.—The Julien electric car with storage batteries, at the Antwerp Exhibition awarded the first prize for railway service.

1886.—The Edison and Phelps systems of telegraphing to and from moving trains brought into use.

CHAPTER XIV.

BOSTON STATISTICS.

Valuation, Debt, Appropriations, and Tax Rate, by Years — Building Permits Issued. — Passenger Travel in and out of Boston. — Travel to New York. — Travelling Distances from Boston. — Sailing Distances. — Shipping Arrivals. — Leather and Wool Statistics.

Valuation and Tax Rate.

The following table shows the valuation of the city, gross funded debt, annual appropriation, and tax rate since 1874 (county debt included with 1886) : —

	Valuation.	Gross Funded Debt.	Annual Appropriation Order.	Tax Rate.
1874, ...	$798,755,050	$42,890,785 77	$12,146,643	$15 60
1875, ...	793,961,895	43,414,829 99	11,104,805	13 70
1876, ...	748,996,210	43,848,835 73	10,180,887	12 70
1877, ...	686,840,586	43,590,497 30	10,267,258	13 10
1878, ...	630,446,866	42,457,022 47	9,555,892	12 80
1879, ...	613,322,692	42,359,816 23	9,133,429	12 50
1880, ...	639,462,495	42,030,125 36	10,190,387	15 20
1881, ...	665,554,597	40,949,332 18	10,475,817	13 90
1882, ...	672,497,962	40,079,312 04	11,054,535	15 10
1883, ...	684,432,671	41,184,358 12	11,214,269	14 50
1884, ...	682,648,000	43,185,669 07	12,666,095	17 00
1885, ...	685,404,600	42,962,180 02	10,608,100	12 80
1886, ...	710,581,700	43,803,322 04	10,553,690	12 70
1887, ...	-	46,774,962 00	11,229,094	-

Building Permits Issued.

	Brick, Stone, and Iron Building Permits.	Wooden Building Permits.	Estimated Cost of Brick Buildings.	Estimated Cost of Wooden Buildings.	Estimated Cost of Additions and Repairs.
1871,	245	272	–	–	–
1872,	974	1,051	7,043,318	3,147,535	–
1873,	646	903	16,001,225	2,000,440	–
1874,	520	1,278	14,211,120	2,586,615	–
1875,	348	709	8,308,760	2,237,820	1,410,518
1876,	200	532	5,343,575	1,383,555	1,355,446
1877,	265	532	4,283,775	1,048,590	1,114,290
1878,	187	473	2,628,225	819,430	852,333
1879,	203	575	–	–	1,606,768
1880,	309	494	1,490,100	474,752	1,327,230
1881,	308	787	1,521,852	686,643	935,765
1882,	235	841	4,932,640	2,379,278	1,607,051
1883,	236	1,005	5,864,577	1,670,806	2,386,226
1884,	312	1,123	5,400,775	3,078,145	1,983,287
1885,	348	1,372	6,218,800	4,552,538	2,560,212
1886,	346	1,353	8,813,100	3,992,792	3,064,813

Boston Passenger Travel, Year ending Sept. 30, 1886.

Passengers to and from Boston.

Northern Roads.

	Inward.	Outward.	Total.	Increase over 1885.	Per Cent.
Boston & Maine, Eastern,	5,496,045	5,511,934	11,007,979	554,142	–
Boston & Lowell,	2,385,116	2,337,886	4,723,002	442,497	–
Fitchburg,	1,513,882	1,508,761	3,022,643	500,786	–
Revere Beach (narrow gauge),	840,092	823,184	1,663,276	232,914	–
Total,	10,235,135	10,181,765	20,416,900	1,730,339	9 26

Southern Roads.

Boston & Albany,	2,944,147	2,944,546	5,888,693	319,251	–
Old Colony,	2,501,309	2,528,734	5,030,043	341,774	–
N. Y. & New England,	1,156,751	1,142,812	2,299,563	251,845	–
Boston & Providence,	2,269,165	2,321,323	4,590,488	366,018	–
Total,	8,871,372	8,937,415	17,808,787	1,278,888	7.74
Total for nine roads,	19,106,507	19,119,180	38,225,687	3,009,227	8 54

The total passenger traffic of the nine steam railroads was 38,225,687; of which the northern roads carried 2,606,113 more than the southern roads.

Number of Trains in and out of Boston.

NORTHERN ROADS.

	Winter.		Summer.		Average Number Passengers to a Train.
	Daily.	Sunday.	Daily.	Sunday.	
Boston & Maine, Western Division,	114	36	116	34	153
Eastern Division;	98	24	118	40	
Boston & Lowell,	147	30	152	32	98
Fitchburg,	98	32	100	33	93
Boston, Revere Beach, & Lynn,	53	26	65	43	85½
Totals,	510	148	551	193	107.4

SOUTHERN ROADS.

Boston & Albany,	135	32	135	32	134
Old Colony,	106	14	119	20	142½
New York & New England,	51	10	51	10	140
Boston & Providence,	101	13	101	13	143
Total,	394	69	406	75	139.9
Total for nine roads,	904	217	957	268	123.6

PAYING PASSENGERS BETWEEN BOSTON AND NEW YORK.

Year ended Sept. 30, 1884,	673,000
Year ended Sept. 30, 1885,	837,465
Year ended Sept. 30, 1886,	990,000

The freight transported by rail lines between Boston and New York in 1885 amounted to 1,103,483 tons. The Metropolitan Steamship line also carried 220,000 tons.

Travelling Distances from Boston.

	Route.	Miles.
Albany, N. Y.,	P. & A.,	202
Atlanta, Ga.,	Pied. Air Line,	1,085
" "	At. Coast L.,	1,207
Atchison, Kan.,	C., B. & Q.,	1,505
Baltimore, Md.,	Phil., W. & B.,	403
Bangor, Me.,	Eastern,	245
Bar Harbor, Me.,	Eastern,	294
Buffalo, N Y.,	N. Y. Central,	500
Burlington, Ia.,	C., B & Q.,	1,242
Burlington, Vt.,	Cen. Vt.,	246
Butte City, Mon.,	N. P.,	2,704
Charleston, S. C.,	At. Coast L.,	1,021
Cheyenne City, Wy.,	U. P.,	2,043
Chicago, Ill.,	Mich Cen.,	1,036
" "	L. Shore,	1,040
" "	Fitch., W. S. & B, and G. T.,	1,003
" "	N. Y., Ch. & St. L. (Nickel Pl.),	1,023
" "	Penn.,	1,129
" "	Cen. Vt. and Gr. Trunk,	1,171
" "	Erie,	1,204
" "	B. & O.,	1,257
Cincinnati, O.,	Penn.,	974
Cleveland, O.,	L. Shore,	683
Columbus, O.,	Penn.,	854
Concord, N. H.,	B. & L.,	75
Denver, Col.,	C., B. & Q.,	2,089
" "	U. P.,	2,096
Des Moines, Ia.,	C., R. I. & P.,	1,394
Detroit, Mich.,	Mich. Cen.,	751
Dubuque, Ia.,	Ch., Mil. & St. P.,	1,221
Duluth, Minn.,	N. W. and Ch, St. P., M. & O.,	1,458
" "	Wis. Cen. and N. P.,	1,543
Fall River, Mass.,	O. Col.,	51
Fargo, Dak.,	N. W. and N. P.,	1,721
Galveston, Tex.,	via New Or.,	2,005
" "	At. & G. Col and S. F.,	2,443
Halifax, N. S.,	E. and Me. Cen.,	736
Harrisburg, Pa.,	Penn.,	413
Hartford, Conn.,	N. Y. & N. E.,	117
" "	B. & A. and N. Y., N. H. & H.,	125
Helena, Mon ,	N P.,	2,601
Indianapolis, Ind.,	Cl., Col., C. & I ,	966
Jacksonville, Fla.,	At. Coast L.,	1,294
Kansas City, Mo.,	St. Louis & M. P.,	1,514
" "	C., B. & Q.,	1,523
Lawrence, Mass.,	B & M.,	27
Leadville, Col.,	U. P.,	2,261
Leavenworth, Kan.,	St. Louis & M. P.,	1,534
Little Rock, Ark.,	Mem. & L. R.,	1,606
Liverpool, Eng ,	from Boston direct,	2,826
" "	via New York,	3,213
London, Eng.,	from Boston via Liverpool,	3,027
Los Angeles, Cal.,	A., T. & Santa Fé,	3,293
Louisville, Ky.,	Cin , L. & N. Or ,	1,084
Lowell, Mass.,	B. & L ,	26
Lynn, Mass.,	Rev. B.,	10
" "	Eastern,	11
Manchester, N. H.,	B & L.,	57
Memphis, Tenn.,	L. & N.,	1,461
Mexico, City of,	At. & Mex. Cen.,	3,887
" "	Houston & Mex. Nat.,*	3,243

* Not yet completed.

Travelling Distances from Boston — *Concluded.*

	Route.	Miles.
Milwaukee, Wis.,	Ch., Mil. & St. P.,	1,121
" "	Ch. & N. W.,	1,121
Minneapolis, Minn.,	Ch. & N. W.,	1,455
Mobile, Ala.,	Pied. & W. Ala.,	1,450
Monterey, Mex.,	Mex. N., via Houston,	2,523
Montgomery, Ala.,	Pied. & W. Ala.,	1,270
Montreal, P. Q.,	Cen. Vt.,	334
Nashua, N. H.,	B. & L.,	40
Nashville, Tenn.,	L. & N.,	1,269
Newark, N. J.,	Penn.,	226
New Haven, Conn.,	N. Y. & N. E,	153
" "	B. & A. and N Y., N. H. & H.,	161
New Orleans, La,	Pied & W. Ala,	1,591
New York,	N. Y. & N. E. and Air Line,	217
"	Fall R. L.,	230
"	Shore L.,	234
"	B. & A., and N. Y., N. H. & H. R.,	236
Omaha, Neb.,	Ch., Mil. & St. P.,	1,526
" "	Ch. & N. W.,	1,528
" "	Ch. & R. I.,	1,539
" "	C., B. & Q.,	1,544
Ottawa, Can,	Can. P.,	454
Paterson, N. J.,	N. Y., L. Erie & W.,	234
Philadelphia, Pa.,	Penn.,	307
Pittsburgh, Pa.,	Penn.,	661
Portland, Me.,	Eastern,	108
" "	B. & M.,	116
Portland, Or,	N. P.,	3,358
Providence, R. I.,	B. & P.,	44
" "	N. Y. & N. E.,	47
Quebec,	Passumpsic,	417
Queenstown, Ire.,	Cunard,	2,740
Quincy, Ill.,	C., B. & Q.,	1,240
Richmond, Va.,	R., F. & P.,	559
Rochester, N. Y.,	N. Y. Cen.,	430
Sacramento, Cal.,	Ch. & N. W. and U. P.,	3,304
Salt Lake City, Utah,	U. P,	2,597
San Francisco, Cal.,	Ch. & N. W. and U. P.,	3,393
Santa Fé, N. Mex.,	A., T. & S. F.,	2,358
Savannah, Ga.,	At. Coast L,	1,122
Seattle, Wash.,	N. P.,	3,689
St. John, N. B.,	Eastern and Me. Cen.,	458
St. Louis, Mo.,	Ind. & St. L.,	1,231
" "	Penn. and Vandalia,	1,282
" "	Ch. & Alton,	1,319
" "	B. & O.,	1,337
St. Paul, Minn.,	Ch. & N. W.,	1,445
" "	Ch., Mil. & St. P.,	1,446
" "	Ch, B. & N.,	1,467
" "	Wis. Cen.,	1,498
Syracuse, N. Y.,	N. Y. Cen.,	349
Toledo, O.,	L. Shore,	796
Topeka, Kan.,	A., T. & S. F.,	1,555
Trenton, N. J.,	Penn.,	274
Vicksburg, Miss.,	via Montgomery,	1,548
Washington, D. C.,	P., W. & B. and B. & O,	443
" "	P., W. & B. and B. & P.,	446
Winnipeg, Man.,	Can. P.,	1,757
Worcester, Mass.,	B. & A.,	44

Distances due west are reckoned by B. & A., N. Y. Cen., and Mich. Cen. lines. Distances south-west, by N. Y. & N. E. Air Line and N. Y., N. H. & Hart., via New York.

Sailing Distances from Boston.

	Nautical Miles.	Statute Miles.
Cape Clear,	2,600	2,994
Liverpool,	2,870	3,305
Scilly Islands,	2,712	3,122
London,	3,082	3,519
Glasgow,	2,748	3,164
Havre,	2,967	3,417
Brest,	2,765	3,184
Cape Finistère,	2,740	3,155
Lisbon,	2,810	3,236
Cape St. Vincent,	2,860	3,293
Cadiz,	3,000	3,455
Gibraltar,	3,060	3,524
Carthagena,	3,290	3,788
Valencia,	3,430	3,950
Barcelona,	3,560	4,099
Fayal,	1,960	2,257
Madeira,	2,650	3,051
Cape Verde,	3,240	3,731
St. Helena,	5,020	5,781
Cape Good Hope,	6,820	7,855
Rio Janeiro,	4,832	5,564
St. Thomas, W. I.,	1,500	1,727
St. John, Porto Rico,	1,480	1,704
Havana,	1,380	1,589
Bermuda,	685	786
Cape Hatteras,	567	659
Cape Farewell, Greenland,	1,657	1,908
Reikiaviig Road, Iceland,	2,341	2,696

Arrivals at Boston from Foreign Ports.

Calendar Years.	Steamers.	Ships.	Barks.	Brigs.	Schooners.	Sloops.	Total.
1872,	139	117	455	608	1,918	–	3,237
1873,	160	76	386	537	1,768	–	3,927
1874,	225	55	319	440	1,512	–	2,551
1875,	155	56	285	413	1,243	–	2,152
1876,	169	32	206	316	1,311	–	2,034
1877,	238	42	256	332	1,405	–	2,273
1878,	296	28	215	335	1,300	–	2,174
1879,	310	37	166	316	1,524	–	2,353
1880,	442	20	366	342	1,955	–	3,125
1881,	462	37	324	333	1,959	–	3,115
1882,	481	22	353	335	1,770	–	2,961
1883,	551	19	304	319	1,541	–	2,734
1884,	576	12	240	243	1,450	5	2,526
1885,	522	20	224	204	1,492	8	2,470
1886,	580	21	257	210	1,571	8	2,647

Receipts of Leather at Boston.

	Sides.	Bundles.
1877,	1,788,902	780,565
1878,	1,851,059	794,203
1879,	1,899,435	996,889
1880,	2,053,549	935,988
1881,	2,539,184	978,347
1882,	2,853,042	1,021,926
1883,	3,287,036	1,057,033
1884,	2,587,124	1,050,910
1885,	3,218,520	1,008,549

Boots and Shoes Shipped from Boston.

	Cases.		Cases.
1877,	1,758,025	1882,	2,413,531
1878,	1,648,724	1883,	2,556,033
1879,	1,959,577	1884,	2,516,048
1880,	2,263,890	1885,	2,672,532
1881,	2,307,731	1886,	2,874,172

Boston Receipts of Foreign and Domestic Wool.

	Domestic.	Foreign.
	Bales.	Bales.
1877,	262,169	46,425
1878,	255,931	30,833
1879,	360,411	69,307
1880,	323,579	86,932
1881,	394,142	43,625
1882,	425,300	57,168
1883,	446,050	57,012
1884,	431,919	56,352
1885,	488,558	66,536
1886,	472,954	96,024

The Boston Stock Market.

Highest and Lowest Prices of Stocks and Bonds for Ten Years Prior to Jan. 1, 1887.

Mining Stocks.

	1877.		1878.		1879.		1880.		1881.	
Cal. and Hecla,	162½	190*	174¾	185	170*	295*	200	260*	201	258¾
Franklin,	8	14¾	5	8	4	31	10¼	50	10¼	18½
Osceola,	17	30	9	17	10	35	30*	48*	28½	40
Quincy,	32	49¾	10½	41¾	10	33½	22	46	31½	51½

	1882.		1883.		1884.		1885.		1886.	
Cal. and Hecla,	231*	255	230*	253	124	240	135*	225	210*	231
Franklin,	10	17	9	15¾	5¾	11¾	5¼	13	8½	17½
Osceola,	30*	38*	17½	33	8	17¼	8	15	10	37
Quincy,	40*	70	40⅛	63½	26	48*	26½	55	45	64½
Tamarack,	–	–	–	–	–	–	33	90	85	110

* Ex div.

Land Stocks.

	1877.		1878.		1879.		1880.		1881.	
Aspinwall,	–	–	–	–	–	–	–	–	7	8½
Boston,	2⅛	5¼	1⅜	4	2⅛	12⅝	5⅝	12	7⅝	11½
Brookline,	2⅛	4	1.40	2¼	1⅝	7½	3½	6½	4⅛	6⅞
East Boston,	9¾	14⅝	8½	9⅞	9	17	7¾	16	10	16½
Maverick,	–	–	–	–	5	8½	2	6⅝	2⅜	4¼
Water Power,	1½	6⅜	1.03⅛	2½	1¼	13½	6⅜	18¼	5½	15

	1882.		1883.		1884.		1885.		1886.	
Aspinwall,	5	7	4	5	4	4	4	5.06¼	4½	9
Boston,	6	8⅞	5½	6¾	4½	6½	5⅛	6⅝	6	9⅛
Brookline,	2½	4½	2¼	2.81¼	2¼	2⅝	2⅜	4	3½	5½
East Boston,	8	10	5	8	5	5	5	6	5	5½
Maverick,	1¼	2½	1	2	1	1⅜	1	1⅜	1¼	3⅛
San Diego,	–	–	–	–	4	18	10	67½	35	140
Water Power,	2½	6⅞	2	4⅛	1¼	3	2¼	6¼	3½	6

Railroad Bonds.

	1877.		1878.		1879.		1880.		1881.	
Atchison 1st 7s,	85	93½	89¼	109½	109¼	115	112	124⅞	119¼	126½
Atlantic & Pacific 6s,	–	–	–	–	–	–	–	–	100	103¾
Atlantic & Pacific Income 6s,	–	–	–	–	–	–	–	–	30	61
Eastern 6s (3½s to Sep '79),	48½	54	52¾	74⅝	65	85	82½	105	103	112
Kan. Cy. S. J. & C. B. 7s	–	–	75	92¾	80	107	106	123	116	124½
L. R. & Ft. Smith 7s,	–	–	–	61	42	86⅜	84	111	110	119
Mex. Central 1sts,	–	–	–	–	–	–	–	–	86½	95
N. M. & So. Pac. 7s,	–	–	–	–	100	104¼	104¼	116¾	114	122¾
Og. & Lake Champ. 6s,	–	–	98¼	101⅜	95	100	98	103	102	107¾
Og. & Lake Champ. inc.	–	–	–	–	–	–	35	38	36	77
Pueb. & Ark. Val. 7s,	77½	85	82	104½	103¾	109½	107¼	118	116¼	123½
Rutland 5s,	–	–	35	63	39	67½	57¾	80	74⅜	85
Sonora 7s,	–	–	–	–	–	–	–	–	89	94
Wis. Central 1sts,	–	–	–	–	–	–	49¾	80	75	80
Wis. Central 2ds,	–	–	–	–	–	–	30	57½	45	66

	1882.		1883.		1884.		1885.		1886.	
Atchison 1st 7s,	116	121½	118	122½	117¼	122¾	121⅛	126	123½	128
Atlantic & Pacific 6s,	91	98¼	91	98	71¾	94	69¾	84½	80½	89⅞
Atlantic & Pacific Income 6s,	14⅞	37	17¾	36⅛	9½	23	13½	27¼	20	27⅝
Cal. South'rn Incomes	70	87	50	70	20	42½	27½	50	35	69½
Eastern 6s (3½s to Sep. '79),	104¾	110½	108¾	113½	107	116½	115½	123	121½	135½
Kan. Cy. S. J. & C. B. 7s	112¾	118	109¾	118	112	120⅓	118⅞	124½	122	127½
L. R. & Ft. Smith 7s,	106	112½	70	106	80	99⅓	99	113¼	113	118½
Mex. Central 1sts,	65	89	56½	75¾	27	63¼	33⅞	59⅛	35¼	60⅛
Mex. Central inc.,	19	32	10¾	22½	6¼	16⅞	6	16½	5⅜	22
Mex. Cent. 10s, scrip,	–	–	–	–	51	89½	61	100½	55	92
Mex. Cent. deb. 10s,	–	–	–	–	–	–	55	97	53	86½
N. M. & So. Pac. 7s,	110	116	111½	116¼	109¾	119	118¾	124	123	128¾
N. Y. & N. E. 6s, 2ds,	–	–	–	–	–	–	80	109⅞	108	117½
Oregon Sh. Line 6s,	97½	105½	90¾	99⅓	65	95	84½	97¾	95¾	106
Og. & Lake Champ. 6s,	103	104	100	103¾	100	101¾	101	106	103	107½
Og. & Lake Champ. inc.	25	47	15½	35	15	23	14	36	26	47½
Pueb. & Ark. Val. 7s,	111¾	117	112	116½	110¾	119⅜	118½	123	122⅛	127¾
Rutland 5s,	64	79¾	55	65⅛	60	72½	66½	84	81	99⅞
Sonora 7s,	84	108¼	96½	105⅞	80	100⅓	94	104½	98½	107¼
Wis. Central 1sts,	75	80	77¾	84	76	83	74¾	88	86	95
Wis. Central 2ds,	42	50	40	55	32	44½	33½	52½	35	59½

Railroad Stocks.

	1877.		1878.		1879.		1880.		1881.	
Atch. Top. & Santa Fé,	10¾	16¾	8¾	94	81¾	124⅜	113⅜	152½	92*	154½
Boston & Albany, .	112½†	128	117¾	132½	129	141	138	165	158†	175½
Boston & Lowell, .	60	75½	56¼	80½	58⅜	87	85†	120	100	115¼
Boston & Maine, .	87	100⅜	96½	110†	108⅝	120½	119	150⅜	145	165⅜
Boston & Providence,	101½†	136¼	99†	113	101	128	126	153	153	172½
Chi., Bur. & Quincy,	95†	119	99½†	113¾	110⅜	137½†	113½†	182½	134‡	182½
Chi. & West Mich., .	–	–	–	17½	17½	60	50	79¾	72½	96†
Central Mass., com., .	–	–	–	–	–	–	–	–	20	40
Cin., San. & Cleve., .	1	4⅝	1½	5⅞	3⅝	20	9¼	20½	18	34
Eastern, . . .	2½	5¾	4¾	17	10	29	24	41½	31	55
Fitchburg, . . .	103	117	110⅜†	121½	112	124	121	145	132½†	154
Flint & P. Mar., com.,	–	–	–	–	11⅜	13½	13½	26⅜	22	40
Flint & P. Mar., pref.,	–	–	–	–	–	–	70	83	81	106
I. Falls & Sioux City,	–	–	50	54¼	47¾	52	42	65	60	93½
K. C., Ft. Scott & Gulf,	–	–	–	–	5	35	29	74	73	101
L. R. & Ft. Smith, .	–	–	–	8	5¾	37	27½	66½	59	91½
Maine Central, . .	–	–	–	–	26	40¼	26	38½	34	54
N. Y. & N. Eng., com.,	10	14	10	34⅛	29⅝	54	32⅜	55½	51	86
Old Colony, . .	84½	103½	87	103½	95	109⅞	106⅞	128¼	124½	134
Ports., Gt. Falls & Con.	3	4½	1¼	11	5	13⅜	12	35	17½	40
Rutland, com., . .	–	–	75c.	2	1	10⅛	5	9¾	4¾	8.43¾
Rutland, pref., . .	5½	10¾	5	9½	6½	30¼	22	36⅜	24	33
Summit Branch, .	10	20	6½	11	6	29	8	24	8	18⅜
Union Pacific, . .	59¾	73	61¼	73	65¼	94½	81	113¼	109½	131
Wis. Central, com., .	–	–	–	–	–	–	2	20¾	18½	39
Wis. Central, pref., .	–	–	–	–	–	–	5	41½	38	59

* Stock div. 50 per cent. † Ex div. ‡ Ex rights.

Railroad Stocks — *Concluded.*

	1882.		1883.		1884.		1885.		1886.	
Atch. Top. & Santa Fé,	78⅞*	96¼	78	86¼	59½	80½	63¼*	89½	84½*	100
Atlantic & Pacific, .	–	–	–	–	5	10	6⅜	11⅜	7	13½
Boston & Albany, .	160	175½	167	185	150	181¼	168	181¼*	178	200*
Boston & Lowell, .	98	105	89	111¼	97¾	116	100½	123¾	118½	136
Boston & Maine, .	139½	158⅜	148¾	167	145	167	166¼	185½	181	212
Boston & Providence,	156½*	167	160	167¾	159	173	165	185½	185	218
Chi. & East Illinois, .	–	–	–	–	–	–	55	67½	80	105
Chi., Bur & North'n,	–	–	–	–	–	–	†	†	54	97
Chi., Bur. & Quincy,	121½	140¾	116	129	107½*	127⅞	116½	138	129	141*
Chi. & West Mich., .	59⅞	82½	40½	62	33	48*	32¼	54	43¼	64½
California Southern, .	–	–	–	–	1	7	4½	14¼	9	39¼
Central Mass., com., .	2¾	22¼	1	4	1	2	1½	7	4⅞	15½
Central Mass., pref., .	–	–	–	–	10	19	10	23	20	40½
Cin., San & Cleve., .	20	30½	16	25	10	16	9	19	13	25⅝
Cleve. & Canton, com.,	–	–	–	–	–	–	2½	7	3	8⅛
Cleve. & Canton, pref.,	–	–	–	–	–	–	16½	25	18	29
Eastern, . . .	30	49¼	35	51¾	29½	51½	43	70½	68⅞	129¼
Fitchburg, . . .	124½	135⅞	112	129	106¾	122	108½	121¼	115	145
Flint & P. Mar., com.,	16½	26	20	33½	15⅜	30½	11½	19	17	34½
Flint & P. Mar., pref.,	90⅞	103	97⅜	106½	84	105	71	92	82½	100
I. Falls & Sioux City,	75*	96¼	75	89½	69	84	60	83*	63½	76½
K.C., Ft. Scott & Gulf,	69½	85½	62	85	74	86*	77½	95½*	70	80
L. R. & Ft. Smith, .	44	70	16	41	14	24	22½	44½	32	51
Maine Central, . .	38	85¼	80	93	83	98	91	125	114	150
Mex. Central, . .	19	33	10	22	6	17	6	15	4	14¾
N. Y. & N. Eng., com.,	43	64	17½	53	9	17⅝	12¼	37⅝	30	68
N. Y. & N. Eng., pref.,	–	–	–	–	–	–	95	111	169½	151½
Oregon Short Line, .	–	–	–	–	–	–	14⅞	28	21	37½
Old Colony, . .	123⅞	139	131	144	131*	149	144¼	164	159½	184
Ports., Gt. Falls & Con.	16¼	34½	20	41½	16	36	33	53	54	118
Rutland, com., . .	2½	5	2¼	4⅜	2⅜	3⅞	2½	6	4	9¾
Rutland, pref., . .	17	28	14	21	14	21½	15	23	20⅞	39
Summit Branch, .	8	16½	4	8	4	15½	10	15	7½	13
Union Pacific, . .	98½*	120	71*	104⅝	28½	84½	41⅛	62	44⅜	67⅞
Wis. Central, com., .	12½	21	13⅜	25¾	7½	14⅜	10¾	24½	15	26⅜
Wis. Central, pref., .	25	35	25	33	15	26	19	37½	25	38

Miscellaneous Stocks.

	1877.		1878.		1879.		1880.		1881.	
Am. Bell Telephone,	–	–	–	–	50	1,000	76	940	90	171
Maverick Nat'l Bank,	145	150¾	140	150¾	142	190¾	190¾	226½	226½	255½
Pullman Palace Car, .	65*	80	93	100	73¼	108*	106½	145½	125*	151½

	1882.		1883.		1884.		1885.		1886.	
Am. Bell Telephone,	124	190	180½	299	141	275	169½*	257	156	225
N. Eng. Telephone, .	–	–	–	–	17½	50	25	36	30	46½
Erie Telephone, .	–	–	28⅜	62	135*	158*	18½	32	25¼	32½*
Maverick Nat'l Bank,	220	245	217	225	220	225	220	225½	220	225¼
Mexican Telephone, .	3	6¼	1¾	4¾	1½	2.93¾	1	1¾	1	2
Pullman Palace Car, .	119*	145	114	134½	94	116¼*	106¾*	136	130	147½*

* Ex div. † New.

CHAPTER XV.

MISCELLANEOUS STATISTICS.

Copper. — Product of the World, Chili, and the United States. — Product of Lake Superior Mines. — Prices Ingot Copper, etc.
Petroleum. — Its Early History. — American Production. — Exports. — Prices, etc.
Business Failures, 1877–87
Fire Insurance Statistics. — Life Insurance Business.
Population of Cities of the World above 200,000.
Investors' Stock and Bond Tables.
Interest. — Laws governing Rates, and Statutes of Limitation. — Days of Grace and Damages. — Legal Holidays. — Rules for calculating Interest. — Increase of Money at Simple and Compound Interest.
Business Law in Daily Use. — Franklin's Business Maxims.

Copper.

America leads the world in the production of copper, the United States and Chili contributing nearly one-half of the world's supply. The product of the United States is now nearly double that of Chili, and has increased six-fold since 1860. In that year it was 5,388 tons; in 1870, 27,000 tons; and in 1886, 72,848 tons. In 1850 it was 650 tons. A single mine, the Calumet and Hecla, yielded in 1886 over thirty per cent. of the entire product of the United States, or over 25,000 tons. It has paid its stockholders $28,500,000 in dividends since 1869. Copper-mining is carried on in twenty-one States and Territories; ore has been found in several others, and the industry is being rapidly developed.

Copper Production of the World, 1879 to 1886.

	1886.* Tons.	1884. Tons.	1882. Tons.	1880. Tons.	1879. Tons.
Algiers,	–	260	600	500	500
Argentine Republic,	–	159	800	300	300
Australia,	9,000	13,300*	8,950*	9,700	9,500
Austria,	–	400*	455	470	245
Bolivia,	–	1,300*	3,259	2,000	2,000
Cape of Good Hope,	7,000	5,000	5,000	5,038	4,328
Chili,	37,000	41,648	42,909	42,916	49,318
Canada,	1,000	236	221	50	50
England,	3,000	2,500*	3,464	3,662	3,462
Germany,	15,000	14,782†	13,316	10,800	9,000
Hungary,	–	500*	976	976	976
Italy,	1,000	1,325	1,400	1,380	1,140
Japan,	5,000	6,000*	2,800	1,900	1,900
Mexico,	–	291	401	400	400
Newfoundland,	1,000	668	1,500	1,500	1,500
Norway,	–	2,706	2,590	2,426	2,412
Peru,	–	362	440	600	600
Russia,	5,000	4,000*	3,000	3,081	3,081
Sweden,	–	662	798	1,074	800
Spain and Portugal,	45,000	43,664†	38,774	35,474	32,697
United States,	70,000	63,950	39,300	25,010	23,350
Venezuela,	3,000	4,600	3,700	1,800	1,597
Cape Breton,	30,000	–	–	–	–
Miscellaneous,	8,000	–	–	–	–
Total,	210,000	218,774	181,438	154,065	151,989

* Estimated. † Partially estimated.

The new sources of copper supply discovered or opened up in 1886 are the Chief Boleo mines in Lower California, the Sudbury mines in Ontario, Can., and the Cape Breton mines in Nova Scotia.

Copper Production of the World. Eight Years to January 1, 1887. In Tons.

Year.	Product.
1879,	151,989
1880,	154,065
1881,	163,030
1882,	181,438
1883,	198,341
1884,	218,774
1885,	223,427
1886,	212,556

Copper Production of Chili. Eight Years to January 1, 1887. In Tons.

Year.	Product.
1879,	49,318
1880,	42,916
1881,	37,989
1882,	42,909
1883,	41,099
1884,	41,648
1885,	38,500
1886,	35,025

Copper Production of the United States.

SIX YEARS TO JANUARY 1, 1887. IN TONS.

	1886.	1885.	1884.	1883.	1882.	1881.
Lake Superior,	39,298	32,207	30,961	26,653	25,439	26,500
Arizona,	7,143	10,137	11,935	10,658	8,029	4,000
Montana,	25,067	30,267	19,238	11,011	4,044	875
Other States and Territories,	1,340	1,439	2,574	3,252	2,956	4,475
Totals,	72,848	74,052	64,708	51,574	40,468	35,850

Lake Superior Product, by Mines, 1870–1887.

[Pounds Ingot Copper. 000 omitted.]

COMPANIES.	1870.	1881.	1882.	1883.	1884.	1885.	1886.
Calumet and Hecla,*	14,061	31,360	32,053	33,125	40,473	47,247	50,518
Quincy,*	2,497	5,702	5,682	5,549	5,680	5,848	7,102
Osceola,*	–	4,179	4,176	4,256	4,247	†1,939	3,944
Franklin,*	1,178	2,677	3,264	3,489	3,748	3,999	5,606
Atlantic,*	372	2,528	2,631	2,682	3,163	3,582	4,830
Pewabic,*	546	1,872	1,482	1,171	227	–	–
Allouez,*	–	1,204	1,683	1,751	1,932	2,135	2,174
Central,*	1,327	1,418	1,353	1,268	1,446	2,169	–
Copper Falls,*	772	722	601	832	930	1,168	1,806
Hancock,	407	571	540	484	562	203	–
Mass,	3	467	737	659	481	365	–
Phœnix,*	999	409	537	512	572	344	–
Conglomerate,	–	386	734	222	1,152	–	–
Huron,*	84	254	364	720	1,927	2,258	2,598
Ridge,	245	235	102	60	74	63	–
St. Clair,	–	125	87	125	175	–	–
Cliff,	444	79	66	10	37	–	–
Grand Portage,	–	26	757	735	255	–	–
Minnesota,	401	24	10	6	1	12	–
Peninsula,	–	–	–	849	1,223	–	–
Other mines,‡	‡1,281	369	318	756	786	§802	1,422
Total, in pounds,	24,622	54,414	57,186	59,268	69,201	72,139	80,000

* The returns of these mines are all official.

† Mill running only six months.

‡ Fifteen different mines of small products.

§ Of this the National produced 162,252 pounds, Tamarack (one month) 181,669, and Wolverine 328,610 pounds.

The Calumet and Hecla during five months of 1887 produced 12,968 tons of copper against 13,249 tons for the same period in 1886.

Product of Lake Superior Mines.

[In Ingot Copper and its cash value, 1845 to 1886, inclusive.]

Year.	Tons.	Value.	Year.	Tons.	Value.	Year.	Tons.	Value.
1845–58,	18,772	$9,333,380	1867,	8,764	$4,442,841	1877,	19,513	$7,327,888
1858, .	4,580	2,129,235	1868,	10,467	4,940,424	1878,	20,846	6,920,540
1859, .	4,464	2,239,591	1869,	13,312	6,230,016	1879,	21,426	7,327,350
1860, .	6,034	2,654,960	1870,	12,311	5,096,752	1880,	24,869	9,947,673
1861, .	7,519	3,487,995	1871,	13,373	5,728,485	1881,	27,270	9,971,702
1862, .	6,793	3,674,255	1872,	12,277	7,979.400	1882,	28,578	10,522,416
1863, .	6,493	4,415,600	1873,	15,046	8,726,100	1883,	29,836	9,457,853
1864, .	6,246	5,870,300	1874,	17,167	8,009,356	1884,	34,600	9,494,306
1865, .	7,179	5,635,515	1875,	18,020	8,120,626	1885,	35,649	7,942,596
1866, .	6,875	4,629,375	1876,	19,135	7,998,430	1886,	40,000	8,760,000

Ingot Copper.

Highest and Lowest Prices for Ten Years to Jan. 1, 1887, and Average Price for each Year.

Year.	Low.	High.	Av. Price for Year.
1877, ...	17⅛	20⅜	18.80
1878, ...	15½	17⅝	16.42
1879, ...	15⅜	21¾	17.35
1880, ...	18	24⅞	20.18
1881, ...	16	20¼	18.27
1882, ...	17⅞	20½	18.41
1883, ...	14¾	18	15.85
1884, ...	10½	15	13.72
1885, ...	10½	11¾	11.14
1886, ...	10	12⅛	10.95
1887 (5 months), ...	9.90	11.85	10.87

Chili Bars.— Price per Ton for Ten Years to Jan. 1, 1887.

Year (Jan. 1).	London Prices.	American Equivalent.	Year (Jan. 1).	London Prices.	American Equivalent.
1877, . . .	£76.10	$382.50	1883, . .	£65.	$325.00
1878, . . .	65.15	328.75	1884, . .	58.	290.00
1879, . . .	58.5	291.25	1885, . .	47.	236.25
1880, . . .	65.15	328.75	1886, . .	41.	205.00
1881, . . .	61.15	308.75	1887, . .	38.10	192.50
1882, . . .	71.	355.00			

Petroleum.

Petroleum was known to exist in New York and Pennsylvania long before it was practically utilized. The name "Oil Creek" was given to two branches of the Alleghany River in Alleghany County, N. Y., and Venango County, Pa., because of the oil which, forcing an outlet through springs, was found on the surface of their waters. In 1845 it was struck in comparatively large quantities while boring for salt near Tarentum, thirty-five miles above Pittsburg, on the Alleghany River. The first movement toward obtaining a supply of it for illuminating purposes was made in 1854 by Eveleth and Bissell of New York, who secured one of the springs on Oil Creek, Pa., and organized a company to work it; but no progress was made until December, 1857, when one Bowditch and Col. E. L. Drake of New Haven began to search for oil. The latter moved to Titusville, Pa., and in the winter of 1858–59 began to bore through the solid rock. His apparatus was so defective that it was not until Aug. 26, 1859, that he struck oil at a depth of seventy-one feet. The honor of the discovery of the boring process has been much disputed, but a majority of people acquainted with the early history of the oil country agree in giving it to Colonel Drake. A boom was immediately started, and in 1860 there were two thousand wells, seventy-four of which produced 1,165 barrels per day. The Cuba field, in Alleghany County, N. Y., was opened up Jan. 1, 1861. Petroleum has since been found to have a wide geographical distribution. It is found in West Virginia, Ohio, and in smaller quantities in various Western States. In Russia and in most of the countries surrounding the Caspian Sea there are extensive fields, and oil is also found in India and Egypt; but none is produced anywhere equal in quality to that

of the original Pennsylvania fields, and the frequent additions which have been made to them.

The yearly and daily average production of petroleum from Aug. 26, 1859, to Jan. 1, 1877, were as follows: —

Year.	Total Barrels.	Daily Average Barrels.	Year.	Total Barrels.	Daily Average Barrels.
1859, . . .	82,000	–	1868, . . .	3,583,176	9,816
1860, . . .	500,000	1,369	1869, . . .	4,210,720	11,536
1861, . . .	2,113,000	5,789	1870, . . .	5,673,195	15,343
1862, . . .	3,056,000	8,372	1871, . . .	5,715,900	15,660
1863, . . .	2,611,000	7,153	1872, . . .	6,531,675	17,895
1864, . . .	2,116,000	5,797	1873, . . .	7,878,629	21,585
1865, . . .	2,497,000	6,841	1874, . . .	10,950,730	30,002
1866, . . .	3,597,000	9,854	1875, . . .	8,787,506	24,075
1867, . . .	3,347,000	9,169	1876, . . .	9,175,906	25,139

The following table shows production, pipe-line deliveries, and export charters of petroleum, in barrels, from Jan. 1, 1877, to May 1, 1887: —

Production, Shipments, and Charters of Petroleum.

Year.	Total Production.	Daily Average.	Total Shipments.	Daily Average.	Total Charters.	Daily Average.
1877, . . .	13,940,171	38,192	–	–	–	–
1878, . . .	15,164,462	41,546	13,750,000	37,700	9,538,400	26,100
1879, . . .	19,741,661	54,086	16,036,000	43,900	12,401,800	33,707
1880, . . .	26,562,000	72,772	15,765,800	43,112	8,785,000	24,017
1881, . . .	28,447,115	77,934	20,240,121	55,320	14,921,300	40,858
1882, . . .	31,059,165	85,093	22,094,300	60,563	14,349,600	39,355
1883, . . .	24,385,968	66,093	21,967,636	60,131	13,791,189	37,707
1884, . . .	23,691,264	64,880	24,053,902	65,697	14,469,107	39,481
1885, . . .	21,225,203	58,145	24,086,104	66,006	15,374,490	42,080
1886, . . .	21,036,765	57,635	26,213,852	72,157	13,801,746	37,817
1887 (4 months), .	6,554,313	54,619	8,144,082	67,788	4,205,825	35,048

"Runs" are receipts of the pipe lines, practically representing production; "shipments" are deliveries by the pipe lines to refiners, etc.; "charters" are equivalent to actual exports.

The following table gives the fluctuations in market price per barrel of pipe-line certificates for nine years to Jan. 1, 1887: —

Petroleum Certificates.

Year.	Month.	High.	Month.	Low.	Fluctuations.	Average for Year.
1878,	Feb.,	1.87	Sept.,	.78	1.09	1.17
1879,	Dec.,	1.28	June,	.63	.65	.86
1880,	June,	1.84⅜	April,	.70⅝	.53¾	.95
1881,	Sept.,	1.01⅜	July,	.72½	.28⅞	.85¾
1882,	Nov.,	1.37	July,	.49¼	.87¾	.79
1883,	June,	1.24¾	Jan.,	.83¼	.41½	1.06
1884,	Jan.,	1.15¾	June,	.50⅞	.64⅞	.84
1885,	Oct.,	1.12½	Jan.,	.68	.44½	.88¼
1886,	Jan.,	.92¼	Aug.,	.59¾	.32½	.71⅜

The increase in the Russian petroleum exports during 1885 and 1886 has been felt to some extent by the American oil trade. The shipping facilities at Batoum are good, but additional means of transportation is required between that port and the Baku fields. A pipe line has been discussed, but the government forbade the use of any material excepting Russian. The immense well reported at Bibi-Eibat, which opened with a flow of 25,000 barrels per day, has entirely ceased to produce.

The table below shows exports of petroleum products from Batoum in gallons, as follows: —

Year.	Total.	Net Increase in 1886.
1885,	31,639,925	–
1886,	54,236,320	25,959,010

Business Failures, 1877 to 1886, inclusive.

Year.	Number in Business.	Number Failures.	Liabilities.	Average Liabilities.	Proportion of Failures.
1877,	652,006	8,872	$190,669,936	$21,491	1 in 73
1878,	674,741	10,478	234,383,132	22,369	1 in 64
1879,	702,157	6,658	98,149,053	14,741	1 in 105
1880,	746,823	4,735	65,752,000	13,886	1 in 158
1881,	781,689	5,582	81,155,932	14,538	1 in 140
1882,	822,256	6,738	101,547,564	15,062	1 in 122
1883,	863,993	9,184	172,874,172	18,823	1 in 94
1884,	904,759	10,968	226,343,427	20,636	1 in 82
1885,	919,990	10,637	124,220,321	11,679	1 in 86
1886,	969,841	9,834	114,644,119	11,703	1 in 98

Fire Insurance.

The following table shows the American business of the home and foreign fire insurance companies in this country: —

Year.	Number of Companies.	Fire Risks Written. In Millions	Fire Premiums Received. In Millions	Fire Losses Paid. In Millions	Ratio of Fire Losses to each $100 of Premiums.	Ratio of Fire Losses to each $100 of Fire Risks Written.	Amount of Fire Risks Written to $1.00 Loss.	Average Rate of Premiums on each $100 of Fire Risks.
1876, .	197	$6,293	$56	$28	50.52	.4457	224.34	.8822
1877, .	276	6,733	55	31	56.63	.4609	216.96	.8137
1878, .	332	6,861	52	26	50.67	.3838	260.51	.7575
1879, .	307	6,984	54	32	58.76	.4516	221.40	.7686
1880, .	293	7,835	62	34	54.11	.4278	233.75	.7904
1881, .	299	8,582	69	39	55.86	.4491	222.64	.8040
1882, .	266	9,456	76	44	58.44	.4686	213.38	.8019
1883, .	300	10,306	86	50	57.85	.4828	207.11	.8346
1884, .	293	10,213	90	55	61.40	.5415	184.67	.8819
1885, .	308	10,269	93	53	57.69	.5201	192.26	.9016
1886, .	306	10,535	95	52	54.34	.4914	203.47	.9042

Life Insurance.

Summary of business for six years of all regularly organized life insurance companies (numbering 47) in the United States, 1879–1884: —

[000 omitted.]

Year.	Total Premium Receipts.	Total Income.	Total Payments to Policy-Holders.	Expenses of Management.	Total Expenditure.	Policies in force end of Year. No.	Policies in force end of Year. Amount.	Admitted Assets.
1879, .	$53,977	$79,929	$59,289	$9,547	$70,604	694	$1,515,574	$431,614
1880, .	55,249	79,739	55,020	10,963	69,418	902	1,578,904	453,241
1881, .	58,781	84,083	55,703	12,135	70,806	1,069	1,676,926	461,058
1882, .	64,131	89,755	55,800	12,976	71,354	1,325	1,798,148	480,127
1883, .	69,894	97,466	59,447	15,404	77,793	1,657	1,959,567	501,639
1884, .	75,603	101,924	61,216	16,189	81,811	1,895	2,093,492	519,674
1885, .	83,879	112,303	64,447	17,912	86,205	2,170	2,300,070	551,742

City Population above 200,000.

[According to the latest censuses.]

London, England,	3,832,441	Buda-Pesth, Hungary,	365,051
Paris, France,	2,269,023	Marseilles, France,	360,099
Canton, China (est.),	1,500,000	Jangtschau, China,	360,000
New York, United States,	1,206,577	St. Louis, United States,	350,518
Berlin, Prussia,	1,122,330	Baltimore, United States,	332,313
Vienna, Austria,	1,103,857	Amsterdam, Holland,	328,047
Tschantshau-fu, China (est.),	1,000,000	Cairo, Egypt,	327,462
Singau-fu, China (est.),	1,000,000	Milan, Italy,	321,839
Siangtau, China (est.),	1,000,000	Leeds, England,	309,126
Tokio, Japan (est.),	1,000,000	Rome, Italy,	300,467
Saitama, Japan,	962,717	Hamburg, Germany,	289,859
Tientsing, China (est.),	950,000	Lucknow, India,	284,779
St. Petersburg, Russia,	927,467	Sheffield, England,	284,410
Philadelphia, United States,	847,170	Osaka, Japan,	284,105
Tschingtu-fu, China (est.),	800,000	Breslau, Prussia,	279,212
Moscow, Russia,	748,000	Shanghai, China,	278,000
Calcutta, India,	683,329	Rio de Janeiro, Brazil,	274,972
Bombay, India,	644,405	Copenhagen, Denmark,	273,727
Constantinople, Turkey (est.),	600,000	Ning-Po, China,	260,146
Bangkok, India (est.),	600,000	Wutschang, China (est.),	260,000
Tschungking-fu, China (est.),	600,000	Cincinnati, United States,	255,809
Hankow, China (est.),	600,000	Turin, Italy,	252,832
Foochow, China (est.),	600,000	Melbourne, Australia,	252,000
Brooklyn, United States,	566,689	Weihein, China (est.),	250,000
Glasgow, Scotland,	555,289	Taijuen-fu, China (est.),	250,000
Liverpool, England,	552,423	Leinkong, China (est.),	250,000
Chicago, United States,	503,185	Seoul, Corea (est.),	250,000
Sutschau, China (est.),	500,000	Dublin, Ireland,	249,486
Schaohing, China (est.),	500,000	Barcelona, Spain,	249,106
Peking, China (est.),	500,000	Lisbon, Portugal,	246,343
Pekalongan, Java (est.),	500,000	Palermo, Italy,	244,991
Naples, Italy,	494,314	Mexico, Mexico,	236,500
Nangkin, China (est.),	450,000	Taiwan-fu, China (est.),	235,000
Birmingham, England,	400,757	San Francisco, United States,	233,959
Hangtscheu-fu, China (est.),	400,000	Munich, Bavaria,	230,023
Fatschau, China (est.),	400,000	Tengtschau-fu, China (est.),	230,000
Yamanashi, Japan (est.),	400,000	Kiota, Japan,	229,810
Madrid, Spain,	397,600	Edinburgh, Scotland,	228,075
Madras, India,	397,552	Bordeaux, France,	221,305
Manchester, England,	393,676	Bucharest, Roumania,	221,000
Boston, United States,	390,406	Dresden, Saxony,	220,818
Warsaw, Poland,	383,973	New Orleans, United States,	216,690
Brussels, Belgium,	377,084	Belfast, Ireland,	207,671
Lyons, France,	376,613	Bristol, England,	206,503

Rate of Income

Realized on Bond Investments if Purchased at the Following Prices and Held to Maturity, at 5, 6, and 7 per Cent.

Price.	1 Year to Run.			2 Years to Run.			3 Years to Run.		
	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.
$90, . . .	–	–	–	–	–	–	8.87	9.94	–
95, . . .	–	–	–	7.74	8.78	9.81	6.87	7.90	8.94
98, . . .	7.11	8.12	9.14	7.11	7.09	8.11	5.73	6.75	7.76
101, . . .	3.97	4.96	5.96	4.47	–	6.46	4.64	–	6.63
103, . . .	1.97	2.93	3.91	3.43	4.42	5.40	3.93	4.91	5.90
105, . . .	–	–	1.93	2.42	3.39	4.36	3.24	4.21	5.18
107, . . .	–	–	–	–	2.39	3.35	2.56	3.52	4.48
110, . . .	–	–	–	–	–	1.88	1.57	2.52	3.46
115, . . .	–	–	–	–	–	–	–	–	1.84

Price.	4 Years to Run.			5 Years to Run.			6 Years to Run.		
	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.
$80, . . .	–	–	–	–	–	–	9.44	–	–
85, . . .	9.60	–	–	8.77	9.87	–	8.22	9.32	–
90, . . .	7.97	9.03	–	7.43	8.50	9.56	7.07	8.14	9.21
95, . . .	6.44	7.47	8.50	6.18	7.21	8.24	6.00	7.04	8.07
98, . . .	5.56	6.58	7.59	5.46	6.48	7.49	5.40	6.41	7.42
101, . . .	4.72	5.72	6.71	4.77	5.77	6.76	4.81	–	6.79
103, . . .	4.18	5.16	6.14	4.33	5.31	6.29	4.43	5.41	6.39
105, . . .	3.64	4.62	5.59	3.89	4.86	5.83	4.05	5.03	6.00
107, . . .	3.13	4.09	5.05	3.47	4.42	5.38	3.69	4.65	5.61
110, . . .	2.37	3.31	4.26	2.84	3.79	4.73	3.10	4.10	5.05
115, . . .	–	2.07	2.99	1.84	2.77	3.69	2.31	3.23	4.15
120, . . .	–	–	1.80	–	1.80	2.70	1.50	2.40	3.30
125, . . .	–	–	–	–	–	1.76	–	1.61	2.49
130, . . .	–	–	–	–	–	–	–	–	1.72

Rate of Income

Realized on Bond Investments if Purchased at the Following Prices and Held to Maturity, at 5, 6, and 7 per cent. — Con.

Price.	8 Years to Run.			10 Years to Run.			12 Years to Run.		
	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.
$71,	–	–	–	9.57	–	–	9.00	–	–
75,	9.54	–	–	8.81	–	–	8.34	9.54	–
78,	–	–	–	5.26	9.45	–	7.87	9.04	–
80,	8.50	9.65	–	7.94	9.09	–	7.57	8.72	9.88
85,	7.53	8.63	9.74	7.12	8.23	9.34	6.86	7.96	9.08
90,	6.63	7.70	8.77	6.27	7.44	8.51	6.19	7.26	8.34
95,	5.79	6.82	7.85	5.66	6.70	7.73	5.58	6.61	7.64
98,	5.31	6.32	7.34	5.26	6.27	7.28	5.34	6.24	7.25
101,	4.85	5.84	6.84	4.87	5.87	6.86	4.89	5.88	6.88
103,	4.55	5.53	6.51	4.62	5.60	6.59	4.89	5.65	6.63
105,	4.26	5.23	6.20	4.38	5.35	6.32	4.46	5.43	6.40
107,	3.97	4.93	5.89	4.14	5.10	6.06	4.25	5.21	6.17
110,	3.55	4.50	5.44	3.79	4.73	5.68	3.95	4.89	5.83
115,	2.89	3.81	4.73	3.23	4.15	5.07	3.46	4.38	5.30
120,	2.25	3.15	4.15	2.70	3.60	4.49	3.00	3.90	4.79
125,	1.66	2.53	3.40	2.20	3.08	3.95	2.57	3.44	4.31
130,	–	1.93	2.79	1.72	2.58	3.43	2.15	3.00	3.85
135,	–	1.37	2.20	–	2.10	2.94	–	2.59	3.42
140,	–	–	1.64	–	–	2.46	–	–	3.00

Price.	14 Years to Run.			18 Years to Run.			20 Years to Run.		
	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.
$71,	8.60	9.87	–	8.09	9.36	–	7.91	9.20	–
75,	8.00	9.21	–	7.57	8.79	–	7.42	8.65	–
78,	7.58	8.76	9.95	7.20	8.39	9.59	7.07	8.27	9.47
80,	7.31	8.47	9.63	6.97	8.14	9.31	6.85	8.03	9.21
85,	6.66	7.78	8.90	6.42	7.53	8.66	6.33	7.46	8.58
90,	6.07	7.14	8.22	5.91	6.98	8.06	5.86	6.93	8.01
95,	5.52	6.55	7.59	5.44	6.47	7.51	5.41	6.45	7.49
98,	5.20	6.22	7.23	5.17	6.19	7.20	5.16	6.18	7.19
101,	4.90	5.89	6.89	4.92	5.91	6.91	4.92	5.91	6.91
103,	4.71	5.69	6.67	4.75	5.73	6.71	4.92	5.75	6.73
105,	4.51	5.48	6.45	4.59	5.56	6.52	4.62	5.58	6.55
107,	4.33	5.29	6.24	4.43	5.39	6.34	4.47	5.42	6.38
110,	4.06	5.00	5.94	4.20	5.14	6.08	4.25	5.19	6.13
115,	3.62	4.54	5.45	3.84	4.75	5.66	3.91	4.82	5.73
120,	3.22	4.11	5.00	3.49	4.38	5.27	3.59	4.48	5.36
125,	2.83	3.70	4.56	3.17	4.03	4.90	3.29	4.15	5.01
130,	2.45	3.31	4.15	2.86	3.70	4.54	3.00	3.84	4.68
135,	–	2.93	3.76	–	3.39	4.21	–	3.54	4.36
140,	–	–	3.39	–	–	3.89	–	–	4.06

Rate of Income

Realized on Bond Investments if Purchased at the Following Prices and Held to Maturity, at 5, 6, and 7 per cent. — Con.

Price.	26 Years to Run.			30 Years to Run.			35 Years to Run.		
	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.
$71, . . .	7.57	8.81	–	7.43	8.75	–	7.31	8.64	–
75, . . .	7.13	8.31	–	7.01	8.27	–	6.91	8.18	–
78, . . .	–	7.98	9.25	6.71	7.93	9.16	6.62	7.85	9.09
80, . . .	6.62	7.76	9.01	6.53	7.72	8.93	6.45	7.65	8.86
85, . . .	6.17	7.26	8.43	6.10	7.23	8.38	6.04	7.18	8.33
90, . . .	5.75	6.81	7.91	5.70	6.79	7.88	5.66	6.75	7.84
95, . . .	5.36	6.39	7.44	5.34	6.38	7.42	5.32	6.36	7.40
98, . . .	5.14	6.15	7.17	5.13	6.15	7.16	5.12	6.14	7.16
101, . . .	4.93	5.93	6.92	4.94	5.93	6.92	4.94	5.93	6.92
103, . . .	4.93	5.78	6.75	4.81	5.79	6.77	4.82	5.80	6.78
105, . . .	4.67	5.63	6.60	4.69	5.65	6.62	4.71	5.67	6.63
107, . . .	4.54	5.51	6.44	4.57	5.52	6.47	4.60	5.54	6.49
110, . . .	4.35	5.31	6.22	4.40	5.33	6.26	4.44	5.37	6.29
115, . . .	4.06	5.00	5.87	4.12	5.03	5.93	4.18	5.08	5.97
120, . . .	3.78	4.71	5.54	3.87	4.74	5.62	3.94	4.81	5.68
125, . . .	3.52	4.43	5.23	3.63	4.48	5.32	3.72	4.56	5.40
130, . . .	3.28	4.18	4.94	3.40	4.23	5.05	3.50	4.33	5.14
135, . . .	–	3.93	4.66	–	3.99	4.79	–	4.11	4.90
140, . . .	–	–	4.40	–	–	4.54	–	–	4.67

Price.	40 Years to Run.			45 Years to Run.			50 Years to Run.		
	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.	Five per Cent.	Six per Cent.	Seven per Cent.
$71, . . .	7.23	8.58	–	7.17	8.54	–	7.13	8.51	–
75, . . .	6.84	8.12	–	6.79	8.08	–	6.75	8.06	–
78, . . .	6.56	7.80	9.05	6.52	–	9.02	6.49	7.74	9.00
80, . . .	6.39	7.60	8.82	6.35	7.57	8.80	6.32	7.55	8.78
85, . . .	5.99	7.14	8.30	5.96	7.12	8.28	5.94	7.10	8.26
90, . . .	5.63	6.72	7.82	5.61	6.71	7.81	5.60	6.70	7.80
95, . . .	5.30	6.35	7.39	5.29	6.34	7.39	5.29	6.33	7.38
98, . . .	5.12	6.14	7.15	5.12	6.13	7.15	5.11	6.13	7.15
101, . . .	4.94	5.94	6.93	4.95	5.94	6.93	4.95	5.94	6.93
103, . . .	4.83	5.81	6.78	4.95	5.81	6.79	4.95	5.82	6.79
105, . . .	4.72	5.68	6.64	4.73	5.69	6.65	4.74	5.70	6.66
107, . . .	4.62	5.56	6.51	4.63	5.58	6.52	4.64	5.59	6.52
110, . . .	4.46	5.39	6.31	4.48	5.41	6.33	4.50	5.42	6.34
115, . . .	4.22	5.12	6.01	4.25	5.14	6.03	4.27	5.16	6.05
120, . . .	3.99	4.86	5.72	4.03	4.90	5.75	4.06	4.92	5.77
125, . . .	3.78	4.62	5.46	3.83	4.67	5.50	3.87	4.70	5.52
130, . . .	3.58	4.40	5.21	3.64	4.45	5.25	3.68	4.49	5.29
135, . . .	–	4.19	4.97	–	4.25	5.03	–	4.29	5.07
140, . . .	–	–	4.76	–	–	4.82	–	–	4.86

Interest Rates and Statutes of Limitations in each State and Territory.

STATES.	Interest Laws.		Statutes of Limitations.					
	Legal Rate, per Cent.	Rate, per Cent, allowed by Contract.	Judgments. Years.	Notes. Years.	Open Accounts. Years.	Sealed and Witnessed Instruments. Years.	Claims against the Estates of Deceased Persons. Years.	Wrongs and Injuries.
Alabama,	8	8	20	6	3	10	1½	6
Arkansas,	6	10	10	5	3	5	2	3
Arizona,	10	12	5	4	4	4	10[4]	3
California,	7	[1]	5	4	2	4	10[4]	3
Colorado,	10	[1]	6	6	2	6	1	6
Connecticut,	6	6	17	17	6	17	1	6
Dakota,	7	12	10	6	6	6	–	6
Delaware,	6	6	20	6	3	20	1	3
Dist. of Columbia,	6	10	12	3	3	12	–	3
Florida,	8	[1]	20	5	3	20	2	3
Georgia,	7	8	20	6	4	20	1	4
Idaho,	10	18	5	5	4	5	–	3
Illinois,	6	8	20	10	5	10	2	5
Indiana,	6	8	20	10	6	20	1	6
Iowa,	6	10	20	10	5	10	1	2 to 5
Kansas,	7	12	5	5	3	5	3	2
Kentucky,	6	6	15	15	5	15	–	5
Louisiana,	5	8	10	5	3	5	–	–
Maine,	6	[1]	20	6	6	20	2½	6
Maryland,	6	6	12	3	3	12	–	3
Massachusetts,	6	[1]	20	6	6	20	2	2 to 6
Michigan,	7	10	10	6	6	10	4	6
Minnesota,	7	10	10	6	6	10	2	6
Mississippi,	6	10	7	6	3	6	1	6
Missouri,	6	10	20	10	5	10	2	3
Montana,	10	[1]	6	6	3	6	–	2
Nebraska,	7	10	5	5	4	5	1½	3
Nevada,	10	[1]	6	6	4	6	10[4]	4
New Hampshire,	6	6	20	6	6	20	3	6
New Jersey,	6	6	20	6	6	16	–	4
New Mexico,	6	12	15	6	4	6	2	4
New York,	6	[3]	20	6	6	20	1	6
North Carolina,	6	8	10	3	3	10	1	3
Ohio,	6	8	15	15	6	15	–	4
Oregon,	8	10	10	6	6	10	–	6
Pennsylvania,	6	6	20	6	6	20	–	6
Rhode Island,	6	[1]	20	6	6	20	3	4
South Carolina,	7	10	20	6	6	6	–	6
Tennessee,	6	6	10	6	6	10	7	3
Texas,	8	12	10	4	2	10	–	2
Utah,	10	[1]	5	4	2	4	1	3
Vermont,	6	6	8	6	6	14	–	6
Virginia,	6	8	10	5	2	20	–	5
Wash. Territory,	10	[1]	6	6	3	6	1	3
West Virginia,	6	6	10	10	5	20	–	5
Wisconsin,	7	10	20	6	6	20	–	6
Wyoming,	12	[1]	5	5	4	5	1	4

[1] Any rate. [2] No usury; but over six per cent. cannot be collected by law.
[3] New York has legalized any rate of interest on call loans of $5,000 and upward on collateral security. [4] Months.

Days of Grace and Damages.

State.	Grace.	Damages.
Alabama,	Usual,	5 per ct.
Arizona,	Usual, except sight drafts.	
Arkansas,	Usual,	2 per ct.
California,	No grace,	5 per ct.
Colorado,	Usual, except sight drafts,	3 per ct.
Connecticut,	Usual.	
Dakota,	Usual on all,	2 per ct.
Delaware,	Usual on all, except payable without time.	
Dist. of Columbia,	Usual on all.	
Florida,	Usual on all,	5 per ct.
Georgia,	Usual, except sight papers.	
Idaho,	Usual,	5 per ct.
Illinois,	Usual, except sight or demand,	5 per ct.
Indiana,	On all bills grace allowed,	5 per ct.
Iowa,	Usual on all,	3 to 5 per ct.
Kansas,	Usual on all,	6 per ct.
Kentucky,	Usual on all	
Louisiana,	Usual on all, except sight or demand,	5 per ct.
Maine,	Usual on all, except demand.	
Maryland,	Usual on all,	8 per ct.
Massachusetts,	Usual on all, except on demand.	
Michigan,	Usual on all, except on demand.	
Minnesota,	Usual on all, except on demand,	5 per ct.
Mississippi,	Usual on all,	5 per ct.
Missouri,	Usual on all, except on sight,	4 to 10 per ct.
Montana,	Usual on all, except on sight.	
Nebraska,	Usual on all.	
Nevada,	Usual on all.	
New Hampshire,	Usual on all, except on demand.	
New Jersey,	Usual on all, except sight on bankers,	
New Mexico,	No grace.	
New York,	Usual, except on sight,	6 per ct.
North Carolina,	Usual on all,	3 per ct.
Ohio,	Usual, except bills on bankers.	
Oregon,	Usual, except sight or demand.	
Pennsylvania,	Usual, except sight and on bankers,	5 per ct.
Rhode Island,	Usual, except sight,	5 per ct.
South Carolina,	Usual on all,	10 per ct.
Tennessee,	Usual, except sight,	3 per ct.
Texas,	Usual on all,	10 per ct.
Utah,	No grace,	2½ per ct.
Vermont,	Usual, except sight or demand.	
Virginia,	Usual, except sight.	
Washington T'y,	Usual on all,	3 per ct.
West Virginia,	Usual, except sight.	
Wisconsin,	Usual,	5 per ct.
Wyoming,	Usual on all.	

Legal Holidays in the States.

Jan. 1. New Year's Day: in Alabama, California, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York,

Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Vermont, Virginia, West Virginia, and Wisconsin.

JAN. 8. ANNIVERSARY OF THE BATTLE OF NEW ORLEANS: in Louisiana.

FEB. 22. WASHINGTON'S BIRTHDAY: in California, Colorado, Connecticut, Florida, Georgia, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Virginia, West Virginia, and Wisconsin.

FEB. 22, 1887. MARDI-GRAS: in Louisiana and the cities of Mobile, Montgomery and Selma, Ala.

MARCH 2. ANNIVERSARY OF TEXAN INDEPENDENCE: in Texas.

MARCH 4. FIREMEN'S ANNIVERSARY: in New Orleans, La.

APRIL 8, 1887. GOOD FRIDAY: in Louisiana, Maryland, Minnesota, and Pennsylvania.

APRIL 21. ANNIVERSARY OF THE BATTLE OF SAN JACINTO: in Texas.

APRIL 26. MEMORIAL DAY: in Georgia.

MAY 30. MEMORIAL DAY: in California, Colorado, Connecticut, Iowa, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

JULY 4. INDEPENDENCE DAY: in all the States.

FIRST MONDAY IN SEPT. LABOR DAY: in Massachusetts and New York.

NOV. 8, 1887. GENERAL ELECTION DAY: in California, Florida, Maryland, Missouri, New Jersey, New York, South Carolina, Texas, and Wisconsin.

NOV. 24, 1887. THANKSGIVING DAY: in all the States.

DEC. 25. CHRISTMAS DAY: in all the States.

Sundays and Fast Days (whenever appointed) are legal holidays in all the States.

SHORT METHOD FOR CALCULATING INTEREST.

Multiply the principal by as many hundredths as there are days, and—

For 4	per cent.,	Divide by 90
5	"	" 72
6	"	" 60
7	"	" $51\frac{3}{7}$
8	"	" 45
9	"	" 40
10	"	" 36
12	"	" 30

EXAMPLE. — Interest on $50 for 30 days at 4 per cent.: $50 \times 30 = 1{,}500$, which divided by $90 = 16\frac{2}{3}$ cents; which is the required result.

When Money Doubles at Interest.

Rate per Cent.	Common Interest.	Compound Interest.
2,	50 years,	35 years, 1 day.
3,	33⅓ years,	23 years, 164 days.
4,	25 years,	17 years, 246 days.
5,	20 years,	14 years, 74 days.
6,	16⅔ years,	11 years, 325 days.
7,	14 years, 104 days,	10 years, 89 days.
8,	12½ years,	9 years, 2 days.
9,	11 years, 40 days,	8 years, 16 days.
10,	10 years,	7 years, 100 days.

Business Law in Daily Use.

The following compilation of business law contains the essence of a large amount of legal verbiage: —

If a note is lost or stolen, it does not release the maker; he must pay it, if the consideration for which it was given and the amount can be proven.

Notes bear interest only when so stated.

Principals are responsible for the acts of their agents.

Each individual in a partnership is responsible for the whole amount of the debts of the firm, except in cases of special partnership.

Ignorance of the law excuses no one.

The law compels no one to do impossibilities.

An agreement without consideration is void.

A note made on Sunday is void.

Contracts made on Sunday cannot be enforced.

A note made by a minor is void.

A contract made with a minor is void.

A contract made with a lunatic is void.

A note obtained by fraud, or from a person in a state of intoxication, cannot be collected.

It is a fraud to conceal a fraud.

Signatures made with a lead pencil are good in law.

A receipt for money is not always conclusive.

The acts of one partner bind all the rest.

"Value received" is usually written in a note, and should be, but is not necessary. If not written it is presumed by law, or may be supplied by proof.

The maker of an "accommodation" bill or note (one for which he has received no consideration, having lent his name or credit for the accommodation of the holder) is not bound to the person accommodated, but is bound to all other parties precisely as if there was good consideration.

No consideration is sufficient in law if it be illegal in its nature.

Checks or drafts must be presented for payment without unreasonable delay.

Checks or drafts should be presented during business hours; but in this country, except in the case of banks, the time extends through the day or evening.

If the drawee of a check or draft has changed his residence, the holder must use due or reasonable diligence to find him.

If one who holds a check as payee or otherwise transfers it to another, he has a right to insist that the check be presented that day, or, at farthest, on the day following.

A note endorsed in blank (the name of the endorser only written) is transferable by delivery, the same as if made payable to bearer.

Ben Franklin's Words of Wisdom.

Want of care does us more damage than want of knowledge.

For want of a nail the shoe was lost, and for want of a shoe the horse was lost.

For age and want save while you may, no morning sun lasts all the day.

Experience keeps a dear school, but fools will learn in no other.

Lying rides upon debt's back; it is hard for an empty bag to stand upright.

Creditors have better memory than debtors.

Women and wine, game and deceit, make the wealth small and the want great.

What maintains one vice would bring up two children.

Plough deep while sluggards sleep, and you shall have corn to sell and to keep.

Work to-day, for you know not how much you may be hindered to-morrow.

Fly pleasure and it will follow you. The diligent spinner has a large shrift.

Now I have a sheep and cow, everybody bids me good-morrow.

Keep thy shop, and thy shop will keep thee.

If you would have your business done, go; if not, send.

Who dainties love shall beggars prove. Fools lay out money and buy repentance.

Foolish men make feasts, and wise men eat them.

He that by the plough would thrive, himself must either hold or drive.

The eye of the master will do more work than both his hands.

Silks and Satins, Scarlet and Velvets, put out the kitchen fire.

Always taking out of the meal tub and never putting in, soon comes to the bottom.

Drive thy business, let not that drive thee. Sloth makes all things difficult, industry all easy.

Early to bed and early to rise makes a man healthy, wealthy, and wise.

If you would know the value of money, try to borrow some.

When the well is dry they know the worth of water.

Not to oversee workmen is to leave them your purse open.

If you would have a faithful servant, and one that you like, serve yourself.

By diligence and perseverance the mouse eat the cable in two.

Diligence is the mother of good luck, and God gives all things to industry.

Industry needs not wish, and he that lives upon hope will die fasting.

There are no gains without pains; then help, hands, for I have no lands.

Buy what thou hast no need of, and ere long thou wilt sell thy necessaries.

At a great pennyworth pause a while, many are ruined by buying bargains.

CALENDAR--July, 1887, to June, 1888.

JULY—1887.						
S	M	T	W	T	F	S
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24	25	26	27	28	29	30
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AUGUST.						
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SEPTEMBER.						
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OCTOBER.						
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DECEMBER.						
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JANUARY—1888.						
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MARCH.						
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JUNE.						
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24	25	26	27	28	29	30

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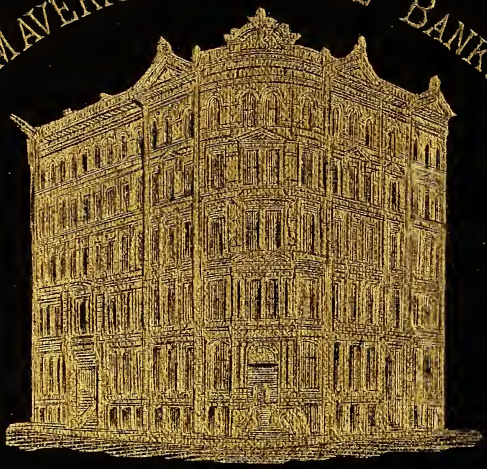
MAVERICK NATIONAL BANK.



BOSTON, 1887.

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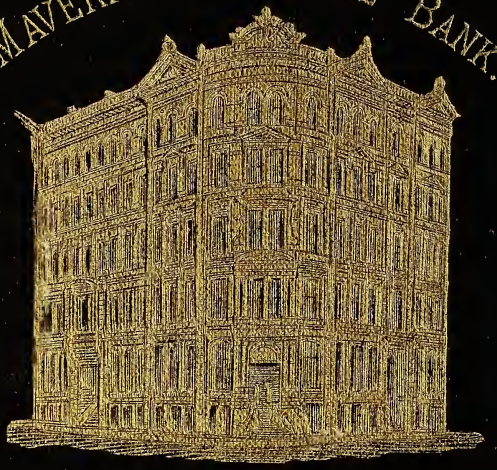

BOSTON, 1887.